

28 JULY 1987



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# ***JPRS Report***

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# **Soviet Union**

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***Economic Affairs***

28 JULY 1987

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## BUNICH INTERVIEWED ON STATE ENTERPRISE LAW

Moscow KOMSOMOLSKAYA PRAVDA in Russian 10 Apr 87 p 1

[Special correspondent S. Oganyan interviews P. G. Bunich, Corresponding Member of the USSR Academy of Sciences, about the proposed USSR law on state enterprises (associations); "Try on the Law — A Special Purpose Coverall"]

[Question] Pavel Grigoryevich, if possible, tell us briefly why we need a law on state enterprises at all. What does it do for plants and labor collectives?

[Answer] Briefly? That is difficult. The proposed law is a great move forward in economic leadership methods. In many respects, it resolves the problems connected with working in an economic accountability enterprise. Furthermore, the proposed law provides rough outlines and defines formulas for future new laws which must be adopted soon. I have in mind, for example, a law on centralized planning.

[Question] Excuse me, but planning in our country is centralized...

[Answer] Yes, it is centralized, but it is fully valid only in relation to the present system which we are abandoning. That is, the new state enterprise law requires a new centralized planning law. And such a law actively is being worked out. But that is not all. The most important matter is being outlined, roughly as it were — reform of material and technical supply. One can say that it flows logically from the plan which we are discussing. There is a short phrase there that, in the future, wholesale trade must become the main form of supply. And so that this does not become an empty phrase, as it were, the types and forms of material and technical supply must be changed radically. Otherwise, the state enterprise law will not work and the enterprise itself will suffocate, entangled in the old ways.

And in order to complete this theme, I certainly must say something about one condition: financial and credit reforms. The present system of finance and credit effectively opposes the plan and in the future will become an obstacle in the law's path.

[Question] According to the law, to those rights recorded there, enterprises to a large extent can determine for themselves what they do or do not need to produce. To free ourselves fully from the "wage ceiling" syndrome, workers will be paid what they earn. No one will point an accusing finger at someone who earns a lot and call him "greedy". On the contrary, they will condemn the person who earns little as lazy and a social parasite. Remember the "House" of Fyedor Abramov? Team leader Pryaslin suffers because he cannot do poor work. He is an excellent mower so the others are obliged to plot against him. They plot against and detest him and, as a result, Pryaslin is transferred to the stables. This is clear Pavel Grigoryevich. But look what happens. The law directs enterprises to do better work and achieve more with fewer workers. In short, we are talking about a sharp rise in labor productivity. This means freeing up a lot of workers.

[Answer] Yes, and unfortunately we are not working seriously on this problem. After all, we are talking about a question of great farsightedness. We intend to accelerate scientific and technical progress. One person will do the work of 5 and 4 will be laid-off. Not slackers and drunkards like we have today, but good workers generally who are not needed by a given enterprise but are needed by society. Then the problem of job placement arises. We must prepare for this ahead of time or abandon technological progress and fall behind. I like Lewis Carroll's idea in "Alice in Wonderland": you have to run if you want to stand in place. And how you must run if you want to be among the first in world technological progress! You must develop headlong speed. But in this case, unavoidably, vast labor resources will be freed up.

[Question] Aren't we talking about unemployment?

[Answer] No, not just that. Unemployment is a social evil. It is personal suicide. A person feels useless and superfluous. Under our conditions of social property, this is an unnatural condition. Under public ownership, how can one citizen work while another is unemployed? Can you imagine yourself in that situation? No, such a case no longer arises. We must create now a state system to forecast the freeing up and dispersal of labor resources.

[Question] There is a point of view about this that a little unemployment wouldn't hurt...

[Answer] Not under any circumstances, though that opinion is sometimes expressed. It is said that this will stimulate workers to work better. This is a perversion of socialism. We cannot copy the incentives of capitalism. Unemployment is too great a sacrifice and a violation of the very principles themselves. It is an incentive for some, but an evil even more.

[Question] The 24th article of the proposed law says that application of the actual law to separate enterprises in different sectors of the national economy is determined by the USSR Council of Ministers. Doesn't this contradict your words? Doesn't this very thing limit the force of the future law while it is still in the embryonic stage? How do you understand this?

[Answer] Very simply. It is common document for industry, agriculture, construction, transport, social services and other sectors, for large, medium and small enterprises. But, all the same, what is good for a small enterprise might be bad for a large one. The same can be said in comparing, lets say, agriculture and industry. These economic sectors require different management systems and, on top of everything else, industry's management system is more progressive. Of course it is far from being what we need, but it is moving ahead.

[Question] Or one can say the opposite: the other sectors have fallen behind the industrial management system.

[Answer] Yes, one could say that. Of course, it still doesn't suit us today but the others suit us even less. The different sectors will reach the highest levels in different ways, according to their own circumstances. This is where the differentiation comes from: examining the capabilities of the industrial sectors objectively and not frightening them with unreal tasks. A lathe must be installed at the height a man can reach.

To what extent have our forecasts been substantiated? The most difficult thing of all is predicting a man's behavior. You raise his wages and his work gets worse. We have observed this in several sectors. On the other hand, everyone has his own attitude and frame of mind. And these different people will influence the economic balance. You will agree, this is a complicated factor. This is one of the reasons we must check the greatest of the economic reforms experimentally.

[Question] But aren't we experimenting too much, too readily? Aren't we overrating this very idea?

[Answer] A great deal, certainly. But it is not only a matter of experiments holding back the application of economic reform. What are experiments? They are reflections of a search, of doubts, of fluctuations, of distrust to some degree, and a fear of change. Recently I met a young worker. He is a good man, a deputy, but in his collective they thought him greedy. They said they would pay him 350 rubles and not one kopek more. Generally, he didn't think that was enough. If he had a bigger family, he says, then he could have earned 2 or 3 times more.

[Question] Who calls him greedy — his comrades or the management?

[Answer] I would say that public opinion rose up against him; or better to say public doubt. As it turns out, it is good to work hard but had to be paid well. He works harder than many others but there is almost no difference in wages. Such wage leveling is alright for the loafer. Under the new law, the loafer must turn himself around. The young man called me recently and he likes the new law. It has aroused his curiosity.



The other sides of the issue are self-management, democratization, and independence. Economic accountability incentive flows from them like a genie from a bottle. If I am dissatisfied with a loafer, I have to get him off my team or transfer him because he gets in the way. He interferes economically. The healthy economic molecule of the team, has begun to beget a healthy economic climate.

[Question] You speak of self-management, economic accountability incentive and an attitude of ownership. But let's consider the graduate of a polytechnical institute or someone who just finished school who joins the team. I do not think that he will be met with open arms. What is he to the economically accountable team — ballast? There is hardly a place in the new collective for such an inexperienced novice. They will try to get rid of him. The rational logic of economic accountability incentive leads to this.

[Answer] Yes, perhaps you are right. All the more so if you look more broadly, not only at the novice but at tomorrow and the coming generation. Who will prepare them and lead them to professional mastery? The team? Objectively, the team is not interested in this. For the team, time spent training a young worker is time wasted and we can't do anything about such collective selfishness. And the proposed law does not take this situation into account.

But there is a way out, dictated by strategic necessity. An enterprise must take responsibility for expenditures for training and placement of young workers. This may be a set monetary subsidy paid to the novice over, let's say, a six-month period. If he doesn't progress in that time, the labor collective soviet can decide to get rid of the shortsighted worker.

[Question] Pavel Grigoryevich, how do you compare the existence in the proposed law of the ideas of one-man management and socialist self-management? How can these two begin to coexist.

[Answer] There is an apparent contradiction here: just who is the boss? It is the man chosen by the collective and invested with its confidence. Within these limits he acts alone, perhaps at some risk. Self-management checks him and approves of or criticizes him. Thus, one-man management harmonizes with self-management.

[Question] New laws will be introduced which, let's say, regulate our future development. In connection with this, how would you evaluate the level of the people's economic education?

[Answer] Does the word "regulate" bother you? There is no reason it should. If there were no policeman standing on the street, at an intersection — you understand? We must have our own economic policemen. Is producing according to an agreed upon plan while not upsetting the balance really unnecessary regulation? This element could lead to very severe consequences. The fact is, regulation is not a bad thing in principle. The whole problem is how to regulate.

Now, about the role of economic education. I am not greatly optimistic about economic education today.

[Question] Now, about the VUZ. We have many economists. Twelve percent of the total number of higher school graduates are in economics. But there are not enough sensible, business economists. Jobs allotted to them by society frequently go unfilled. University educated economists do not want to work in their specialty. What are they doing? They are working as bartenders, waiters and auto service attendants. From an economic point of view, they made the right choice.

[Answer] Yes, they learned all too well, which occupations still pay a supplemental income. But let's look a little deeper. If we were to turn out good, strong economists then one could do the work of three and, accordingly, get the pay of three.

Today, we are turning out people who are incapable of making an independent decision. We are educating "knights of the rueful countenance". They are able to work only within a limited range and they are not interested in working. We have reduced designers to draftsmen.

[Question] Apparently, the situation with economists in itself reflects the situation in economics.

[Answer] Yes, and in the very sense that economics has produced a demand for poor economists. We need a system which demands not simply an economist but a manager — a man who knows how to manage and to make effective, courageous, long-range decisions and who is not afraid to act independently. When firms need this type of economist, then the economy will make a counter demand on the VUZ. The economy will not be able to tolerate such VUZes. But right now they support each other very well. They turn out poor rather than good economists, sometimes even willingly.

[Question] Pavel Grigoryevich, the proposed law is aimed at perfecting the productivity of enterprises and toward raising their economic indicators. But what will be done about enterprises which are not in a position to improve their work? That is, isn't there a possibility of bankruptcy?

[Answer] You know, reducing the matter to bankruptcy is not obligatory. One can talk about it but only like you would talk about a threat. Imagine a strap hanging on the wall for educational purposes but rarely used. There is a Czarist cannon which was never fired and a Czarist bell which was never rung.

[Question] Bankruptcy, or liquidation of an enterprise as it is written in the proposed law, is not excluded. If an enterprise is hopeless, if repair and capital expenditure cannot pull it out, if there are no good cadres to cure it, if the sickness runs too deep, if it has been stricken with economic cancer, then this enterprise must be liquidated.

[Answer] And that is just what I would like to say in conclusion. One should not think that the proposed law under review answers all the questions, or the majority of them. Many things have been outlined only here and many only alluded to. A great deal of practical, scientific work is needed to determine precisely what has not been done, when to do it, and the consequences. A program must be worked out to accomplish a new economic management system because all these reforms have their own, definite consequences. In essence, the law proposes, for example, a new planning reform as a state directive. And what is a state directive? It is not what we have now where I order an enterprise to do something and it does it. Rather it will be like this: I order an enterprise to do something and I am responsible. This is so that it will not be disadvantageous for the enterprise and so it will not suffer.

Secondly, enterprises and the budget are intended to be transferred to a mutual tax relationship. Usually our taxes were raised from other means — cooperative or foreign. There was no understanding of taxes in state enterprises. For the first time, this law states that consideration of the budget will switch to a tax base. This is a very important factor. Now if you do poor work you profit little and the state collects nothing. That is, good and bad enterprises were the same in terms of budget consideration. But it will be that a single, fixed tax percentage will be collected from both the good and bad enterprises. The good enterprise will be left with a lot, the poor one with little. The poor enterprise will feel the economic pressure severely.

Nothing educates like good, strong economic accountability.

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CSO: 1820/140

## UKRAINIAN GOSPLAN CHAIRMAN ON RESTRUCTURING, ACCELERATION

Kiev EKONOMIKA SOVETSKOY UKRAINY in Russian No 3, Mar 87 pp 7-16

[Article by V. Masol, chairman of Ukrainian Gosplan: "The Soviet Ukraine: The Course toward Restructuring and Acceleration"]

[Text] The second year of the five-year plan period is now off to a working start in our country. In fulfilling the decisions of the 27th CPSU Congress, the working people have achieved positive changes in the economy. The course outlined by the party toward restructuring and acceleration of socioeconomic development is increasingly taking on real outlines and is embodied in the people's work. And although only the first steps have been taken on this path, the results are already fully perceivable. Above all they are in the economic indicators with which the first year of the five-year plan period ended. For a number of indicators the economy reached the level of the 12th Five-Year Plan assignments, and for some even exceeded them.

However, the main work is ahead of us. The decisions of the recently held January CPSU Central Committee Plenum noted that the final goal of restructuring is to update all aspects of the society's life, give socialism most modern forms of social organization, and uncover the creative potential of the socialist order to the fullest degree.

The working people of the Ukrainian SSR, like all Soviet people, are giving all-out support to the course toward restructuring and acceleration of socioeconomic development and aiming at insuring that this process develops steadily and brings visible, ever more important results. Last year the increase in industrial production reached 4.4 percent in the republic while the figure in the annual plan was 3.4 percent, and it was all obtained by raising labor productivity. Above-plan output worth 1.1 billion rubles was realized.

The indicators which characterize production efficiency were improved. Last year social labor productivity rose by 3.9 percent as compared to 2 percent in 1985. The relative savings of live labor on this basis was 751,000 persons. Material-technical resources were used more rationally than before.

Sectors which are part of the republic's agro-industrial complex were further developed. In agriculture the production and procurement of grain, potatoes,



vegetables, fruit, and animal husbandry output increased. All this had a favorable effect on the work of the food and meat and dairy industries and on improving the population's supply of foodstuffs.

A large construction program was fulfilled in the republic. The volume of capital investments incorporated increased and 203 major production projects and capacities were put on line. The work of transport organizations improved and the volume of freight carried by general-purpose rail and motor vehicle transport increased.

The program to further increase the people's well-being is being consistently implemented. Real personal incomes have risen and the network of objects of trade, domestic services, municipal services, and health care has been expanded. Last year 1.6 million residents of the Ukraine celebrated housewarming parties.

And still, despite the improvement of affairs in the economy, it should be acknowledged that many reserves have not yet been brought into economic circulation. Certain ministries and departments and oblispolkoms are not showing the necessary persistence in bolstering trends toward accelerated growth and higher levels of economic activity. The economy's transition to the path of intensification is being carried out with insufficient activism. Consumers were short more than 2 billion rubles worth of output last year as a result of breakdowns in contract deliveries.

Analysis of the reasons for these negative phenomena in the economic sphere, as M.S. Gorbachev emphasized at the January CPSU Central Committee Plenum, confirms that the "work of restructuring has proven to be more difficult and the reasons for the problems which have accumulated in society are deeper than we imagined earlier."

The positive things which restructuring has already provided us with were basically achieved by strengthening labor, state, and planning discipline and putting things in order, that is, by using reserves which lie on the surface, as they say. But subsurface reserves related to the operation of the long-term strategic factors of growth--acceleration of scientific-technical progress, intensification of production, and a higher technical level and quality of output being produced--are only starting to be used.

Therefore, an active search is being made in the republic for the most effective ways to resolve the key tasks of the economy's development and to overcome the inertia of past years. What are we speaking of? Above all, acceleration of the development of such key sectors of the economy as machine building and construction, the fuel-energy and agro-industrial complexes, chemical industry, and others. At the same time radical changes are taking place in investment policy, above all in the direction of expanding the volumes of reconstruction and technical reequipping of existing enterprises. The decisive measures which have now been adopted to shift enterprises and whole sectors to work in conditions of full cost-accounting should play a major role in this.

A great deal also depends on refining planning, which is becoming an active lever for implementing the important measures adopted by the CPSU Central Committee and the Soviet Government which remove obstacles on the path to develop the economy and open up room for developing the initiative and independence of economic managers.

Plans of associations and enterprises are being freed from an abundance of indicators; economic standards are being extensively applied in planning; planning of scientific-technical progress is being improved in a fundamental way; and restructuring of the work of planning organs is underway in accordance with the demands of today and the future tasks of development of the economy.

The course toward restructuring and acceleration of the growth rate and a decisive transition of our country's economy to an intensive basis of development was most fully embodied in the State Plan of Economic and Social Development of the Ukrainian SSR for 1987, which is in full keeping with the strategic course of the 27th Party Congress and the assignments of the 12th Five-Year Plan.

Unlike in past years, this plan is devoting special attention to bringing long-term factors of growth in public production into operation to a fuller extent; emphasis has been laid on final rather than intermediate results; and a complex of social measures encompassing all aspects of the life of the working people has been fully developed for the first time.

Also characteristic of the plan for the current year is the fact that during its formulation, the precept by which the five-year plan is the basic form of planning and the base for formulating indicators, ceilings, standards, and balances of annual plans has been fully realized. This undoubtedly increased the role of the five-year plan, insured its stability, and allowed collectives doing a good job to discover existing reserves and bring them into operation and to overfulfill plans without fear of establishing too high a base for subsequent years.

At the present time great new opportunities are being opened up for labor collectives in questions of realizing plan assignments. Since January 1987 enterprises of five industrial USSR ministries and a number of major associations and enterprises of other sectors located on the republic's territory as well as the maritime fleet have been transferred to full cost-accounting [khozraschet], self-financing, and self-support [samookupayemost]. The fulfillment of contract obligations is becoming the main indicator in industry.

The work of light industry enterprises will not only be evaluated according to the results of fulfilling plans in physical terms and according to profits but also by the results of fulfilling trade orders in accordance with contracts concluded. At the same time the transition of construction organizations to full cost accounting is beginning. According to the experience of the Belorussian Railway, new methods of economic activity are being disseminated in the republic's rail transport.

Measures outlined in the plan to develop material production sectors and increase the efficiency of economic activity will enable the national income and amount of industrial output in the Ukrainian SSR to be increased by 3.6 percent. Practically the entire increase in national income and all the output in the material production sectors are to be obtained through growth in labor productivity. And at least two-thirds of this growth will be obtained because of the expanded range of application of progressive technologies and the increased technical level of production.

In the current year a number of measures are envisioned to overcome the trend toward aging of fixed production capital. The coefficient of their renovation in the economy will rise to 7.2 percent as compared to 6.8 percent last year.

The volume of work to use resource-saving and low-waste technologies is being expanded. As a result ministries' and departments' additional need for rolled metal products and cement will be covered by increasing the efficiency of their use by 75 percent, and for lumber--by 80 percent. The use of waste products and by-products of production will account for almost 13 percent of the total amount of resource consumption, which substantially exceeds last year's indicators.

Fulfillment of the assignments envisioned by the plan will make it possible to conserve almost 1 billion rubles worth of material resources as well as reduce the materials intensiveness and energy intensiveness of national income.

Extensive introduction into production of the achievements of science and technology is one of the most important conditions of the acceleration of socioeconomic development and improvement of the economy's qualitative indicators. The plan for the current year envisions concentrating efforts and resources on key directions of scientific-technical progress.

The republic special-purpose scientific-technical programs "Labor," "Energy Complex," "Agricultural Complex," "Materials Intensiveness," "Metal," and "Transport" and the "Biotechnology" scientific program are also focused on resolving these tasks; these programs will have an economic impact of more than 1 billion rubles. Also slated to continue on a large scale is work to mechanize and automate production and use progressive base technologies, whose application will increase by a factor of 1.5 as compared to last year's plan.

The introduction of progressive scientific-technical achievements to a significant degree predetermines a reduction in the materials intensiveness of production. In the current year about 900,000 tons of rolled ferrous metal products are to be saved, more than 300,000 tons of cement, and 560,000 cubic meters of lumber.

The use of computer equipment, especially personal computers, as well as automated control systems is being expanded in the republic. Industrial robots, robot engineering complexes, and flexible production systems will be extensively used.

The production of more than 1,000 new types of industrial output will be incorporated in our republic for the first time; 600 of these new types are



among the most important types of new generations of equipment with high technical-economic indicators. At the same time more than 1,500 items of obsolete types of output are being withdrawn from production.

The extensive introduction into the economy of highly efficient machines and technological processes is expected to decisively influence the qualitative transformations in production potential. And the role of machine building is especially great in this. Therefore, the plan for the current year devotes special attention to the accelerated development of this very important sector of the economy. The rate of production of this output envisioned is almost twice the previous rate established for industry as a whole. Sectors directly involved in the technical reequipping of the economy will be developed very rapidly: machine tool building, the electrical engineering industry, transport and agricultural machine building, and production of computer equipment.

Unlike in past years, paramount attention is being devoted to increasing the technical level and quality of output. State acceptance of output, which has been introduced at 298 of the republic's enterprises and should put up a reliable barrier against defective output and low-quality items, is called upon to play an important role in this.

Sectors which are part of the fuel-energy complex face great and complex tasks. In power engineering the priority continues to be given to accelerated development of atomic power engineering. The entire increase in production of electricity is to be obtained using nuclear fuel. Decisive measures will be taken in the republic's coal industry to eliminate bottlenecks and replace the existing line of cutting faces, regulate ventilation and the work regime, especially in dangerously explosive layers, put the mining economy in order, and accelerate the replacement of obsolete coal-mining complexes with new generation machines. The extraction of the main types of fuel--coal, oil, including gas condensate, and gas--is planned in volumes corresponding to the assignments of the five-year plan for the current year.

The technical reequipping and updating of the coke chemical industry, the development of the mining industry, and reconstruction of rolling mills and shops for producing steel pipe will be continued at enterprises of the metallurgy complex. The implementation of these measures will enable the sector's enterprises to insure production of output at the five-year plan assignment level, while the production of pig iron, steel, steel pipe, and coke will even slightly exceed the plan level. The manufacture of rolled products with thermal reinforcement and of non-oven vacuum processed steel is increasing. The production of rolled products of low-alloy steel, high-strength pipe, and gas piping with plastic coatings, and progressive types of metal pieces is being expanded. About 1 million tons of metal will be conserved in the consumption sectors of the economy by doing this, and the operational features of machines and metal designs have been improved.

The production of the major types of chemical output intended for 1987 corresponds to the five-year plan. One of the main tasks of the sector's labor collectives is to now seek reserves and opportunities for increasing the production of mineral fertilizers; this will help fulfill plan assignments in agriculture.

The assignments of the Food Program and the five-year plan have been made the basis of the plan to develop the republic's agro-industrial complex. The entire increase in the output of agriculture is to be obtained by increasing the yield of agricultural crops and the productivity of livestock and poultry on the basis of scientifically substantiated systems of farming and animal husbandry, intensive technologies, strengthening of the feed base, and improvement of breeding work.

As in past years, further development of the grain economy is of paramount importance. In 1987 grain production should increase to 50.5 million tons, and the yield to at least 31 centners per hectare, that is, it is to increase by 6.5 quintals as compared to the past five-year plan. Obtaining this gross yield of grain is a very complicated task, especially because of the unfavorable weather which has occurred in a number of the republic's rayons. Therefore, measures have been formulated by which the structure of planted areas must be the most efficient and the needed amount of spring crop seeds has been put in excellent planting condition. Special attention has been turned to the all-out introduction of intensive technologies for growing grain crops. The efficiency of this measure was confirmed last year when 13.4 quintals more winter wheat was obtained from each hectare with intensive technology than with ordinary technology.

The plan envisions increasing the production of feed, using it more rationally, further refining breeding work, and introducing progressive technologies. On this basis it seems possible to produce 4.07 million tons of meat, 23.6 million tons of milk, and 16.3 billion eggs.

The increased scope of agricultural production and the process of restructuring occurring in the agro-industrial complex's work demands a substantial increase in the level of economic work in the countryside. Today the task is to teach everyone to think competently in terms of economics. The tasks posed can only be successfully resolved in that way. But at many farms expenditures are presently increasing more rapidly than the production of agricultural output. Because of this, the prime cost of many types of agricultural output is too high, and it shows a tendency to increase. As analysis shows, one of the basic reasons for such a situation is the inadequate level of economic work. Therefore, it is now necessary to analyze in depth the degree to which the present system for granting farms financial, credit, and other privileges is based on and meets present demands and the introduction of the cost-cutting mechanism. After all, it is no secret that many managers have become accustomed to letting the state cover the results of their miscalculations and omissions, lack of organization, and slackness.

In the current year as usual a great deal of attention will be devoted to developing private garden plots, which, of course, are a tangible source for replenishing food resources. These plots will receive aid in the form of feed, young stock and poultry, and seeds; they will be allocated transport and equipment to work the land.

In food industry sectors the production of the major types of output is envisioned mainly at the level of the five-year plan assignments. The

comprehensive processing of raw materials is to be bolstered, the production of finished output is to be increased by reducing waste and losses and introducing low-waste and no-waste technologies, and production of output of increased consumer and biological value and foods and convenience food ready for consumption is to be increased.

In our country recently we have adopted important measures to restructure the work of the construction complex. The system of management of construction has been fundamentally improved. In the Ukraine a single republic Ministry of Construction directly subordinate to the UkSSR Council of Ministers has been created on the basis of the former USSR-republic ministries--the UkSSR Ministry of Heavy and Transport Machine Building and the UkSSR Ministry of Industrial Construction. The republic bears full responsibility for the ministry's formation of a work program and its fulfillment of state plans.

At the same time a complex of measures to refine the economic mechanism in construction has been implemented; this made it possible to increase the economic incentive of all participants in the construction system to put production capacities and projects of the social sphere in operation within the normative period of time or ahead of schedule and to increase work quality and lower its cost.

In 1987 26.9 billion rubles in capital investments are to be directed to develop the republic's economy using all sources of financing. When capital allocated for production development is distributed, priority is given to machine building, ferrous metallurgy, the fuel sectors, and the agro-industrial complex. As the five-year plan envisioned, the proportion of capital used for technical reequipment and reconstruction of existing enterprises is rising. Capital investments to develop the social sphere are being fundamentally increased.

The plan has also posed important tasks for the republic's construction organizations, which are to perform 13.1 billion rubles worth of contract work. The number of production building projects under construction at the same time has been reduced by 10-12 percent. The problem is that the projects mentioned must be built only within the normative time periods. This is a complicated task but it absolutely must be resolved.

As in recent years, incomplete construction throughout the economy under the jurisdiction of the UkSSR Council of Ministers as a whole remains at the normative level. The volume of work being performed by the in-house method is to be increased.

The state of affairs in the construction complex is in many respects predetermined by the degree to which construction sites are supplied with the necessary production materials and by development of the base of the construction industry. The volume of production of cement, wall materials, precast ferroconcrete elements, sanitary-engineering equipment, and other output outlined in the plan has been set at the level of or higher than the five-year plan assignments. The needs of the population have also been taken into account.



In examining the major directions of development of material production in the current year, one must not fail to mention that qualitative indicators of the economy have now been made paramount; they can be achieved only by a decisive struggle for a smooth work rhythm, elimination of the last minute rush, and fulfillment of contract obligations. The pace of the struggle for quality is increasing and is taking place under the beneficial influence of bold and innovative measures to refine the mechanism of economic activity being implemented in accordance with the decisions of the 27th Party Congress.

The strategy of development of the Soviet economy requires that new searches be made for a rational combination of the interests of all participants in the reproduction process. Proof of this is the now-published draft of the USSR Law on the State Enterprise (Association), which is to provide juridical guarantees of the economic independence of enterprises and protect their economic life from unjustified intervention by ministries. The draft law envisions a transition of all enterprises to full cost-accounting and substantial expansion of their rights in the areas of planning, supply, and incentive for those working.

The recently adopted decree on refining the organization of wages and introducing new wage scales and position salary scales for workers in the production sectors of the economy also promotes the change to more flexible economic methods of management. Labor payment will now be based on a new economic foundation--not at the expense of the state budget as before, but using the capital earned by the enterprises, within the limits of the normative wage fund.

The realization of the large and important tasks outlined in the state plans presupposes at the present stage of development of society expansion of the base of people's self-management. Important decrees to refine the activities of the soviets are focused on this. They open up broad, favorable opportunities for soviets to more actively carry out their role as competent organs of working people's power with full rights which bear responsibility for all spheres of life and for fulfillment of plans of socioeconomic development on their own territory.

The work which has now been undertaken to intensify the economy and convert many enterprises to two- and three-shift operations requires that the activities of local organs of power be specially activated. Above all this applies to restructuring of the work schedules of children's preschool and educational institutions and medical institutions of trade, public catering, and above all transport.

In addition to development of material production, the republic plan for the current year outlines a broad complex of measures to increase the well-being and satisfy the growing needs of the population, further increase the production of consumer goods, accelerate the development of the services sphere and housing construction, and strengthen the material base of sociocultural institutions.

As the 27th CPSU Congress noted, the lessons of the past confirm that in past years both the center and local organs allowed pressing problems of the



development of the material base of the sociocultural sphere to be underestimated. The appropriate conclusions were drawn from this and now the state of affairs there is fundamentally changing. After all, one of the major goals of the restructuring being carried out in our country, as the January 1987 CPSU Central Committee Plenum emphasized, is priority development of the social sphere and ever more complete satisfaction of the needs of Soviet people for good conditions of labor, daily life, education, and medical services.

The republic's plan for the current year envisions measures to develop the production base, which insures a steady increase in the output of goods for sale to the population. This year 65 billion rubles worth of these goods will be produced. In light industry production of calico and satin fabrics, children's chrome-leather shoes, new types of youngsters' shoes and highly comfortable shoes for the elderly, and knitted wear made of linen with simplified structures and with printed patterns is to be increased at a rapid rate. From 46 to 82 percent of the assortment of output will be updated.

The production of consumer goods at USSR-subordinate enterprises will be increased at a rapid rate (by more than 10 percent); at those enterprises, in addition to expanding the assortment, production of new complex output will be incorporated. The participation of local industry enterprises will also become more active; special emphasis will be also be put on improving the quality of goods for the people at these enterprises.

Paid services will receive further development, the sophistication of service will be increased, and introduction of its progressive forms and new types will be expanded. But in order to do this, a number of serious problems which have become pressing in the personal services sphere must be solved. The main one is increasing the efficiency of this sphere. Quite a great deal here depends on how we handle reserves which will appear in connection with the adoption of the law on individual labor activity.

In the social program a special place is being given to the housing problem. Additional measures adopted last year made it possible to incorporate more than 1 million square meters of above-plan housing in the republic.

In the current year almost 600 million rubles more in capital investments are being allocated to solve it than was envisioned by the five-year plan; this will make it possible to incorporate an additional 2 million square meters of housing. The redistribution of the capital investments of ministries and departments from the production sphere to housing construction, thanks to measures adopted on better use of existing capacities and technical reconstruction of enterprises, helped, among other things, accomplish the above.

The support by the labor collectives of about 200 of the republic's enterprises of the initiative of the Gorkiy automobile builders focused on providing every family with an individual apartment or house through above-plan deductions to incentive funds and the active participation of workers in building housing by the in-house method is also quite important. The decision to set up 30 youth complexes in 16 republic oblasts is also yielding tangible

results. At the same time, attention is being intensified on preservation of the housing fund and expenditures for these purposes are increasing by 6 percent in the current year.

Thirteen percent more capital investments is to be used to develop municipal services in 1987 than in the past year. New water supply line structures will be put on line in Sevastopol, Dnepropetrovsk, Lvov, and Pereyaslavl-Khmelnytskyi and purification structures--in Kiev, Vinnitsa, Nikolayev, Dnepropetrovsk, Cherkassy, and Donetsk. Similar objects will also be built in a number of other cities and populated points of the republic.

In the current year urban electric transport will be further developed. Forty-two kilometers of streetcar tracks and trolleybus lines will be built and put on line. The length of trolleybus lines will be increased in Voroshilovgrad, Donetsk, Dnepropetrovsk, and Poltava, and new streetcar tracks will be laid in Dnepropetrovsk, Lvov, Odessa, Kharkov, and Kiev. The metros in Kiev, Kharkov, and Dnepropetrovsk will be further developed.

An additional 410,000 apartments (including 95,000 in rural areas) are to be provided with gas and substantial work is to be done to fix up urban and rural populated points.

Positive changes are now taking place in the sphere of public education and culture. Based on the Basic Directions for Reforming General Education and Vocational Schools, a long-term program for development of public education has been formulated and is being implemented in the republic; fundamental progress is to be made in the coming years on the path to realize the tasks posed by the party to more fully satisfy the population's needs for children's institutions.

The development of general education is oriented to realizing the Leninist principles of unified labor and polytechnical education, a higher level of education and indoctrination of young people, and improvement of their preparation for an independent life.

State capital investments focused on the construction of schools and preschool and extracurricular institutions this year exceed last year's plan level by a factor of 1.5 and are 18 percent higher than the five-year plan assignments. Moreover, investments of sectorial ministries and departments in the construction of these projects is increasing by 15 percent. This will make it possible to build and put in use places for 180,000 students in general education schools and 75,000 places in kindergartens and nurseries in the current year.

Tasks to develop cultural institutions and mass information media outlined in the plan will make it possible to increase their contribution to the all-people's cause of accelerating socioeconomic development, propagandizing the Soviet way of life, and indoctrinating working people and, especially, young people.

In the current year 30 percent more state capital investments than was envisioned by the five-year plan is being directed to construction of cultural

and art projects. An equipment-studio television complex in Kiev and oblast libraries in Ternopol and Poltava are being built. Construction of an opera and ballet theater in Kharkov and music and drama theaters in Uzhgorod and Kirovograd will continue and reconstruction of an opera and ballet theater in Kiev and a Russian drama theater in Simferopol will be completed. A number of movie theaters, music establishments, and other cultural facilities are to be built.

Improving people's health and increasing the length of their active life is work of paramount importance. The further development of health care is focused on resolving these very tasks. Special emphasis has been laid on preventive measures and on increasing the quality of medical care.

State capital investments for health care have been increased by 19 percent for the current year. Specialized and general somatic treatment centers for the adult population, about 20 central rayon hospitals, a student hospital with 240 beds, the Kharkov Oblast Hospital with 450 beds, city hospitals in Donetsk, Dnepropetrovsk, and Melitopol, and other treatment and prevention institutions are to be built and reconstructed. Buildings and structures for engaging in physical training and sports and a home for elderly people and invalids will be built. Thus additional opportunities for solving the problem of completely encompassing the republic's entire population with the health center system are being created even in the coming years.

As we see, capital investments to develop the republic's social sphere are sharply increasing in the current year. This demands that all forces of both builders and clients be mobilized so that allocated capital is completely incorporated and projects under construction are put on line in the normative time periods. The economic levers and stimuli must operate fully and monitoring by local soviets of sociocultural projects must be intensified.

The large-scale and complex tasks posed in the plan for the current year which is now being implemented in all spheres of our life and restructuring demand that in the year of the 70th anniversary of the Great October Socialist Revolution each collective and each laborer sense his own responsibility and his involvement in the progressive transformations occurring in Soviet society, fight for the successful fulfillment of plan assignments, and secure these positive processes with shock labor.

The plan, cost-accounting, and competition are the levers which enable labor collectives to accelerate scientific-technical progress, improve the quality of output, and increase the efficiency of the use of resources and of the fulfillment of the party's constructive plans.

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CSO: 1820/138

## COMPLETE REVIEW OF EXISTING NORMS PLANNED

Moscow PLANOVOMYE KHOZYAYSTVO in Russian No 3, Mar 87 pp 69-77

[Article by V. Gotlober, head of Department of Political Economics at Kuban State University and I. Shevchenko, teacher in the same department: "Normative Support for Accelerating Scientific-Technical Progress"]

[Text] Krasnodar — Scientific-technical progress under socialism appears as a process that is conditioned by the action of economic laws and is directed towards improving all aspects of social production through the continuous development and rapid utilization of scientific and engineering achievements. An important role is played in this process by a system of progressive, technically sound and dynamic norms and accepted standards.

For example, an increase in the amortization norms and a new system for computing them will strengthen the intensity of use of available means of production and accelerate the replacement of obsolete equipment.

An increase in the quality of the products being produced will depend upon the progressive requirements imposed upon it by the normative-technical documents, standards and instructions. Tremendous importance is being attached to the setting of norms for the quality of products at cost accounting enterprises. Thus the approval of a progressive quality norm for each branch will raise the responsibility of collectives for the final result of their labor.

The program for normative-technical and metrological use of fuel-energy resources during the 1982-1990 period is being implemented at the present time. It calls for the development of a number of norms, which will establish progressive values for fuel and electric power expenditures for more than 500 types of equipment and also for their introduction into the standards for fuel and energy conserving machines. This clearly demonstrates the role played by economic norms and standards in raising the quality of the products being produced. It can be applied to a high category of quality only if, from the standpoint of economy, it responds to the most progressive norms and indicators for energy and resource conservation of the latest scientific and engineering achievements.

An important role is being played by the norms and standards for achieving economies in the use of material resources. The task consists of developing



scientifically sound and progressive norms for expenditures of these materials. The setting of norms is the basis for rational use of material resources. Economies are impossible in the absence of an efficient system of norms which makes it possible to effectively take into account all expenditures. In the case of production, where control has not been organized over the use of materials and the setting of norms for their consumption, an estimate of the resources saved will be carried out on a formal basis. Progressive norms motivate collectives into realizing savings in the use of fuel, materials, electric power and all types of raw materials and they serve as a reliable condition for creating an anti-expenditure economic mechanism.

Thus, norms and standards promote an acceleration in scientific-technical progress in all of its directions. This is possible owing to the fact that an acceleration in NTP [scientific-technical progress] is a systematic process for creative and purposeful work by people. Its implementation is based upon a system of national economic plans. The use of scientific and engineering achievements is based upon planning, a scientific validation for decisions handed down and conscious improvements in the proportions of social reproduction. An acceleration in NTP is planned taking into account scientifically sound norms and standards.

At the same time, scientific-technical progress exerts an effect on the content, nature of use and renovation of norms and standards and imposes raised requirements upon them. The more important of these requirements: an all-round approach for the setting of norms; close interdependence among the existing norms and standards; purposeful orientation of the norms used and planned for achieving the final result of social production and raising its effectiveness; scientific validity and progressive nature of the norms and standards used and newly introduced into operations; the timely renovation of existing norms and the replacement of obsolete ones which do not meet the requirements for economic development.

The all-round approach for the setting of norms presupposes the development, introduction and use of norms and standards during all phases of the reproduction cycle, while taking into account the socio-economic, organizational-technical, political-legal and ideological basis for the planned goals and tasks. In the process, considerable importance is attached to close mutual coordination of the norms and standards during the stage of their formation. It is inadequate at the present time, at times the norms in use function in a detached manner and a change in one of their groups does not bring about a timely review of the other groups.

The all-round approach for the setting of norms for the reproduction process is reflected in the system of norms and standards. However, this system is in need of improvements. In particular, in addition to validating the norms in production, ideally the norms in the sphere of exchange and consumption should be developed more thoroughly. Scientific-technical progress is intensifying the role played by labor collectives in implementing the tasks of social development, it is raising the importance of all-round norms in the final result, it is introducing corrections into the setting of norms for collective processes and accordingly it is raising the need for including all of these norms in the system.

The principal portion of the norms associated with the use of live and materialized labor functions in the sphere of production. Their typical feature — relative independence. Since they are decisive for norms employed in other phases of the reproduction process, mutual coordination and agreement should commence with them. The all-round approach for the setting of norms presupposes the extensive use of expenditure norms for live and materialized labor in an interrelated sense. Scientifically sound expenditure norms for live labor do not have a substantial effect with regard to activating the human factor or accelerating NTP if inflated norms for raw material expenditures are used with them or if sufficient use is not being made of the production capabilities.

The expenditure norms for materialized labor exist in two forms: expenditures for raw materials, other materials, fuel, energy and other objects of labor used for satisfying the needs of expanded reproduction; and norms which regulate the normal functioning of means of labor. The former is understood to mean a planned measure for the productive consumption of raw materials and other materials, with a maximum possible value for their expenditures for the production of a unit of output. Large complications arise when establishing norms for material expenditures in auxiliary production. Experience has shown that the use of some of them is generally not planned here owing to the absence of expenditure norms and means for computing the observance of them. And hence it is impossible to realize a true savings. For example, is it possible to discuss the amount of oil saved during a year's time by machine operators if timely control over the use of the oil is not organized?

For describing means of labor, use is made of norms for the requirements for specific types of equipment, for replacing equipment and for the formation of a reserve and also norms and standards for the use of equipment, production capabilities and areas. Here there are also definite difficulties. For example, an increase in the effectiveness of machine workloads — this is one path for intensive development of the economy. At the same time, indicators for the intensity of use of equipment are being employed mainly when summarizing the results of their operation over a planned period or when analyzing a workload, that is, they do not have a directive nature. There is no systematic control over the use of machines over the course of a calendar period. Thus the establishment of economic normative-tasks for each enterprise and its subunits will raise responsibility for the organization of production and labor.

At the present time, a considerable increase has taken place in the number of existing individual norms and this is creating definite difficulties in managerial practice. A large number of people have been forced to concern themselves systematically with the problems of control and taking into account the quality of the norms employed. The possibility of reviewing and renovating the entire normative base is causing difficulties. And finally the planning process, which is based upon individual norms, is being detailed and regulated to excess.

A solution for the situation that has developed lies in employing consolidated norms for the final operational result. They are formed on the basis of individual and operational norms, but they are established for the entire

complex of work carried out. Their value lies in the fact that they simplify substantially a review of all existing norms, they reduce the amount of time required for preparing the various plans and, most importantly, they respond to the interests of society, since they reflect the final result of collective labor, released from irrational production losses.

The best example is the use of labor norms for the final operational result of a collective, particularly a brigade. It not only reduces considerably the number of individual norms, but in addition it brings about a substantial simplification in planning the production tasks of a brigade and in the wage computations and it promotes greater independence by the collective in solving production problems.

When establishing collective norms, importance is attached to taking into account the advantages of uniting workers in a brigade (combining of professions, expanding the zone of services, interchangeability, reducing the amount of time required for servicing the work positions and so forth), advantages which can be defined as the effect of collective labor. However, experience has shown that such advantages are not always reflected in collective norms, which quite often are established by individual norm setting methods.

Collective norms, more than individual ones, reflect the peculiarities of the live labor process and describe its final result. With regard to the requirements for the final result of any process, here it is necessary to mention the exceptional role played by economic standards. As mentioned during the 27th CPSU Congress, they appear as a "promising instrument for planned management. A centralized basis for administering the economy is flexibly combined with the use of commodity-money relationships and the law of value" (1). An increase in the role they play is explained by a number of factors. The intensification of the economy and an acceleration in scientific-technical progress raise a need for strengthening balance and proportionality in national economic development and for concentrating on the final operational results of collectives. This can be carried out through norms which reflect the specific social tasks and the requirements for achieving the final result. Its form and value are determined directly by the type of the specific group of norms. But with the aid of one summary norm, it is impossible to reflect all of the requirements with regard to the final result. A need exists for a system of mutually related norms, each of which describes a definite portion or type of social task.

The extensive development of the economy has expanded substantially the sphere of use of norms. This entailed a considerable complication of the normative base and an increase in the number of isolated norms which quite often were not associated with one another. They reflect the requirements for individual aspects of the labor process and for each of its aspects. Yet they do not take into account the mutual conditionality and dependence of the latter and thus they do not fully reflect the final result. The use of norms definitely makes it possible to eliminate the mentioned isolated state of norms, since they appear as a transitional indicator from the primary production norms to the final result.



The use of stable, long-term and year-differentiated norms is providing the best possible assistance in mobilizing the internal reserves and potential of collectives and in raising production efficiency. As is known, planning practice based on that already achieved has adversely affected the development of the economy, it has restrained the initiative of labor collectives and it has resulted in insufficient use of internal reserves. The taking into account of economic norms makes it possible to combine centralized planning based upon directive indicators and economic stimulation. The stimulating action of norms is manifested not only in the fact that with their aid a definite amount of withholdings from profit for the economic incentive fund is established and it becomes possible to issue incentives to cost accounting collectives for the results of their production-economic activities, but also in raising activity and initiative in the solving of intra-production problems. In other words, the use of economic norms promotes the consistent implementation of the principle of democratic centralism.

The increase in the role played by economic norms in controlling production is also explained by the fact that they make it possible to orient the cost accounting subunits towards achieving promising results and their planned tasks, while combining stability and dynamism. The norms are established for the five-year plan and are stable for the duration of the entire period planned. However, stability does not signify their immutability. With the passage of time, the norms become obsolete and cease to meet the requirements for economic development. Usually, stability is understood to mean their immutability from the standpoint of the centralized organs for planning and administration or in accordance with the initiative displayed by labor collectives. They are established in the five-year plan prior to the commencement of the plan and they are differentiated by years, directly changing to the side which opposes their obsolescence and in the future they remain stable (2).

And finally, economic norms are the basis for the cost accounting activities of enterprises and associations and their use is becoming an indispensable condition for converting over to self-support and self-financing. The norms for socially necessary requirements are made available directly to each cost accounting collective. At the same time, with the aid of financial norms, the state exercises purposeful control over the resources of enterprises and stimulates their efficient consumption.

The system of norms and standards is a mobile and dialectically developing formation. It is based upon comprehensive knowledge of the actions of the economic laws of socialism and consequently it must play an active role, serve as a means for controlling economic processes, exert an influence on their nature and promote an acceleration in scientific-technical progress. At the present time, it is becoming fully realistic to use economic norms in economic activity, norms which are conditionally referred to as norms for intensification. Their purpose is to establish the requirements for cost accounting subunits which describe the final result of the work of collectives.

Two groups of intensification norms can be singled out: special purpose and objective. Let us examine in detail the purpose of each one of them. Special purpose norms encompass the entire intensification process and all stages involved in the movement of social product and they express the requirements for the final production result. They can promote an acceleration in NTP and intensification along definite lines. For example, with their aid it becomes possible to evaluate the feasibility of producing individual types of products and to select the most acceptable means for intensification, to plan the final result and so forth. Special purpose norms can function at all administrative levels and they can be established for all social production or for individual cost accounting subunits. Moreover, their regulating and stimulating value is manifested to a considerably greater degree in the latter case. Indeed, aware in advance of their specific tasks for a forthcoming period, labor collectives are able to organize their production activities, compare their opportunities and develop initiative in a more purposeful manner.

Norms for effectiveness can be developed very well from a group of special purpose intensification norms. At the same time, a need exists for new norms which conform to the new stage in economic development. Actually, the process of comparing expenditures and results is becoming more complicated. Up until recently, it was enough to ensure overall growth in effectiveness and to achieve a favorable ratio between expenditures and results. Today a chief concern is exactly what sources can ensure this growth and how this growth affects the prospects for economic development.

The range of questions concerned with effectiveness, which can be solved with the aid of economic norms, can be expanded. For example, in order to control investment processes at the level of cost accounting subunits and also for the purpose of exercising control over the correct implementation of structural policy, successful use can be made of economic norms, the form of which will vary depending upon the type of branch involved. This includes such norms as the ratio between the physical replacement of a portion of the fixed capital and the modernized portion, between the active and passive parts, between growth in labor productivity and the capital-labor ratio and others. By making these available to cost accounting subunits, together with the five-year plans differentiated by years, it is possible to raise the administrative level for economic activity. The achievement of such quantitative values for these norms will serve as the foundation for the material stimulation of enterprises. On the other hand, the failure to carry them out will necessarily bring about a reduction in the size of the material incentive fund.

Special importance is attached to the question concerned with regulating the processes for replacing the productive capital of enterprises. Within the competence of the economic leaders, a solution for this problem can be accelerated through the expanded use of norms for capital replacement for each of the groups. Actually, distinct from the norms for amortization deductions established on a centralized basis, the use of norms for capital replacement includes elements of independence. Their observance, in keeping with the competence and potential of the economic leaders, will affect the amount of profit remaining at the disposal of an enterprise, that is, the norms have a stimulating effect. The quality of goods being produced is largely determined

by the progressive nature of the equipment in use and by the level of mechanization and automation of the production processes. Thus, for branches occupying key positions with regard to accelerating NTP, the norm for capital replacement is ideally established separately for the replacement of conventional equipment and automatic equipment, that is, a higher percentage of replacement for progressive types of equipment. Moreover, since this equipment is also subject to obsolescence, normative control should be established over its scientific-technical level. In other words, the use of norms for effectiveness can produce a positive effect provided their development is based upon realistic economic processes. Their organizing effect is manifested only at those times when they are made available in a timely manner to cost accounting subunits, so as to enable a collective to prepare in advance for achieving them.

The second group of intensification norms — objective — is more specific in nature. They differentiate the requirements of society for each object of administration or aspect of the labor process. The observance of these norms promotes an approach by stages towards the final result of social production and it ensures the achievement of normative values for the entire intensification process. Man-power, production areas, raw materials and other materials, equipment, the production process as a whole and output can all be singled out as just such objects. Distinct from norms in the first group, they contain specific requirements for each object which are made available to the direct executive agents — labor collectives. The objective norms embody a complete cycle of work for each of the objects and they organically supplement the action of the norms for effectiveness.

Let us examine the norms which establish the requirements for man-power. One of them -- is the normative labor intensiveness for a unit of output. It describes a complex of live labor expenditures for the production of a unit of product at all stages in its production and it expresses them in one measurement gauge. Normative labor intensiveness is a type of task for an enterprise which must not be exceeded. Its value lies in the fact that it takes into account not only the entire complex of labor expenditures for the production of a definite type of product, directly when carrying out the technological process, but also all organizational-production relationships between allied technologies and between all aspects of the labor process.

Another important objective norm for man-power is the power-intensiveness of labor. It establishes the task for ensuring an economically feasible ratio between the total amount of fuel-energy resources in a conditional-annual computation, which were used throughout the year, and the volume of net output produced during this same period. The economic sense of this norm consists of comparing the expenditures for fuel-energy resources with the final operational results of the particular labor collective.

An important role is played by the establishment of an optimum ratio between various categories of workers and between the principal and auxiliary workers. An excessively large number of the latter and expenditures for their wages are reducing considerably the output per worker and lowering other indicators of effectiveness. At the same time, a reduction in their number is also adversely affecting the work of the principal and auxiliary services and



prolonging the repair periods, the periods for the sale of finished products, deliveries of raw materials and so forth. A similar situation is being observed in connection with violations of the optimum relationships between workers and ITP [engineering and technical workers], since a lack of improvement in the methods for standardizing labor for those engaged in creative work often leads to an increase in their numbers, lowers discipline and the operational results of collectives. Thus the establishment of a normative relationship will create favorable conditions for raising the return from each worker. But this requires thorough analysis and accounting based upon objectivity in the data employed. Indeed the establishment of it of and by itself does not provide any reliable guarantees for growth in labor productivity, since a complex of mutually related norms is required which combine the elements of centralism and independence. The use of norms is more preferable in this instance, since with a centralized plan for economic leadership they make it possible to display greater independence by the collectives in solving various organizational problems and controlling production and they promote an increase in the role played by social self-government.

One object in the setting of norms is that of the products produced. Importance is attached to achieving a high degree of competition among the products not only through improvements in their quality and reliability, but also by more frequent replacement of models. The introduction of state acceptance of products will promote objectivity in evaluating their quality from the standpoint of an all-state approach and more rapid replacement of the assortment. The annual approval of normative tasks for the replacement of goods in production will orient the scientific-research subunits of branches and enterprises towards designing progressive types of products which take into account the latest scientific and engineering achievements. It is important for such a norm to be differentiated by branches and yet its value, in our opinion, must not be less than 20 percent. We would note in this regard that a high level of product replacement has been achieved at leading enterprises throughout the country. In particular, the products being produced at the Berdsk Radio Plant have been replaced two and three times.

For each of the mentioned objects of intensification, there should be a set of norms which would orient the direct executive agents towards a more intensive social production process and to searching for internal reserves for the enterprises. Moreover, they must not replace the existing and successfully performing norms, but rather they must bring the normative base into conformity with the requirements of the new stage for economic development.

Under the conditions involved in accelerating NTP, an increase is taking place in the requirement for scientific validity and progress in the existing norms and standards.

The scientific validation of norms, in the broad sense of the term, implies taking into account the degree of knowledge of the economic laws of socialism. Subjectivism is excluded when establishing norms, since this encourages many negative phenomena, such as excessive growth in wages compared to labor productivity, a disruption in the balance for plans and overstating of the planned requirements for workers and for the wage fund.

The scientific validity of norms also signifies their constant dynamism, a change in conformity with development of the production forces of society and improvements in the forms of administration. Understatement leads to a situation in which the contribution to social production will be less than that required and the reward obtained for the result of labor unjustified. But overstating the situation is undesirable because it brings about an increase in the intensity of labor. The norms for successfully fulfilling the assigned functions, provided they are progressive, reflect the plan tasks and prospects for development and not just the result achieved. Their orientation for the future is an indispensable condition for accelerating scientific-technical progress.

In this regard, special attention is attached to proper renovation of the normative base and to uncovering and replacing obsolete norms in a timely manner. Their moral obsolescence is a process which is conditioned by a disparity between the requirements and rules established by the norm for the constantly changing technical production level and the degree of its organization and the increasing skills and production experience of the workers. A norm, even if it is scientifically sound, is the result of conscientious and purposeful work by people and it reflects more or less accurately the level and status in the development of the mentioned factors at the moment that it was established. The changes taking place in them cannot be reflected in the norm. This requires a legal document, an action or a revision.

In order to regulate the moral obsolescence of norms and their timely renovation and replacement, in addition to the usual methods employed for revising them in economic practice, it is obvious that a restriction should be placed upon the maximum period of their effectiveness. The maximum period to be established should be such that it coincides with the duration of existence of the economically permissible gap between the actual and real level of development for the technical and social factors and the level the value for which is recorded in the established norm. Since a revision of it immediately following an increase in the level of development of skills and production experience, equipment and production organization, compared to that reflected in the norm, is practically impossible, then during the course of a definite period of time (economically permissible maximum), such a gap will not have a substantial effect on restraining growth in effectiveness, labor production and so forth.

From our standpoint, the maximum effective period for norms is 5 years. This is conditioned by the fact that the economically feasible period for the use of means of production at the present time is 5-7 years. In addition, a planned replacement of norms should be coordinated closely with planning social-economic development for a five-year period. And finally there is still one other circumstance. A five-year period has already been established as the maximum period of time for some groups of norms and standards. This applies primarily to some norms for the formation of economic incentive funds, wages per ruble of marketable product, withholdings for the fund for the development of science and engineering, norms for live labor expenditures and so forth. It must be disseminated to cover the entire system of active norms and standards.

A limitation on the maximum effective period for norms is needed in particular for branches which determine scientific-technical progress. At the same time, they must undergo revision throughout this entire period. In many instances, the maximum period may not coincide with the five-year period. For example, this occurs when the production period for some types of products is less than 5 years or when production is carried out in small batches that ensure the periodic replacement not only of active norms but also products. On the other hand, a longer effective period for norms should be established for other branches. A slow replacement of the logistical base for production or low rates for the revision of existing norms could serve as the basis for this. In such instances, raised periods for replacement which do not conform to those actually achieved may deprive a production collective of interest in the results of his labor and weaken the system of stimuli. In other words, a differentiated approach should be employed for determining the maximum period and it should be based upon objective economic prerequisites.

One method for revising norms (live labor expenditures) -- is that of developing calendar plans. In those areas where this work is carried out based upon true potential, fine results are achieved in raising labor productivity, lowering labor-intensiveness and raising production efficiency. However, not all of the enterprises are developing calendar plans and this is lowering substantially the quality of the existing norms. Quite often a subjective approach is employed in preparing them.

A calendar plan creates an opportunity for overcoming the obsolescence of norms in a planned manner. In the process, three groups of them can be singled out: norms not included in a plan, since the products for which they were established are subject to be removed from production; new norms introduced together with mastering new types of products; completely obsolete norms. The obsolete norms include those which were not revised in a timely manner as a result of centrally introduced organizational-technical measures associated with the introduction and mastering of new equipment and the modernization of existing equipment or with a change in those technological processes which shorten the cycle for the production of goods, measures in accordance with the plans for NOT [scientific organization of labor] and so forth.

From our standpoint, a calendar plan must annually encompass not less than 20 percent of the existing norms. In the process, importance is attached to singling out those factors on the basis of which they are revised in accordance with an administrative decision or on the basis of initiative displayed by the labor collectives. The latter is not taken into consideration in the plan. If following completion of work on preparing the plan, it turns out that the number of norms included in it is less than the 20 percent level, work should be started once again on composing the plan. An annual review of 20 percent of the existing plans will make it possible to completely replace the entire normative base for production over a five-year period.

The presence of a large number of effective norms for all phases of the reproduction cycle raises the question as to which specific ones should be reexamined first and foremost. In answering this question, we would note that



the plan for the review of norms is itself a component part of the system for national economic plans. Thus it is naturally interrelated with it and must conform fully to the more important trends in economic development, advanced during each historical stage. An acceleration in the placing in operation of new capital and the technical modernization of production will constitute the principal trends for developing a system of norms and normatives in the immediate future. Increased concern for the individual and ensuring social fairness in the distribution of material and spiritual blessings are raising the role and importance of the norms for live labor expenditures. In other words, planning for the revision of norms is a component part of the system of national economic plans and it fully reflects the directions to be followed for developing the latter.

The observance of the requirements for norms and standards is an important condition for accelerating NTP. The norms must play an organizing and mobilizing role, they must orient the labor collectives towards raising labor productivity and the efficiency of social production and they must serve as a socially necessary criterion for the importance of each specific type of labor in behalf of society.

#### FOOTNOTES

1. Materials of the 27th CPSU Congress of the Communist Party of the Soviet Union. Moscow, Politizdat, 1986, p 251.
2. Kiperman, G. Economic Norms in the Administration of Industrial Production. PLANOVoye KHOZYAYSTVO, 1966, No. 7, pp 22-30.

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CSO: 1820/135



## MURAKHOVSKIY ON INCREASED PRODUCTION OF OIL-BEARING CROPS

Moscow PRAVDA in Russian 22 Apr 87 p 3

[Interview with V.S. Murakhovskiy, 1st deputy chairman of the USSR Council of Ministers and chairman of USSR Gosagroprom, by PRAVDA correspondent A. Artsibashev: "To Heighten the Yield of the Oil-Bearing Field"; date and place not specified; first paragraph is source introduction]

[Text] Recently the Politburo of the CPSU Central Committee approved measures for satisfying the country's requirements for vegetable oil and increasing the production of seed for oil-bearing crops. What brought about this decision and what tasks confront the country's farms in this regard? PRAVDA correspondent A. Artsibashev asked the 1st deputy chairman of the USSR Council of Ministers and chairman of USSR Gosagroprom [State Agroindustrial Committee] V.S. Murakhovskiy to respond to these questions.

"Russia has cultivated rape, mustard, flax and delicious lactarius mushrooms since olden times" stated Vsevolod Serafimovich, "Our country is the homeland for cultivated sunflowers. Our interest in this crop was not accidental. Oil-bearing crops furnish high calorie food products. Vegetable oil by itself is a most valuable food product and, in addition, it is the basic raw material for the production of margarine, mayonnaise and kitchen fats. The expenditures for obtaining vegetable oil are considerably less than those required for producing fats of animal origin. In order to obtain 1 ton of sunflower oil in the southern regions of the country, 1 hectare of arable land is required and for the production of the same quantity of cream butter —8-10 times more space is needed. Of equal importance is the fact that oil-bearing crops are a source of plant fodder protein. One ton of oil-seed meal can be used for balancing 8-10 tons of concentrated feed in terms of protein."

Despite the above, the tasks of the Food Program for the production of oil-bearing crops are not being carried out. This is creating definite difficulties in connection with supplying the population with vegetable oil.

[Question] What brought about this situation?

[Answer] We consider one of the chief reasons to be the decline that has taken place in recent years in the material interest of kolkhozes and sovkhoses in the production of oil-bearing crops, especially sunflowers, and

as a result of this, the serious shortcomings noted in the organization and technology employed for the cultivation of oil-bearing crops. A crop such as rape simply is not being accepted out on our fields and our work with soybeans leaves much to be desired.

In those areas where genuine interest is being displayed in the cultivation of oil-bearing crops, fine yields and good income are being realized. The Kolkhoz imeni Kirov in Leningradskiy Rayon in Krasnodar Kray annually obtains almost 30 quintals of seed from each of 900 hectares of sunflowers. At the Zavety Lenina Kolkhoz in Lipetsk Oblast, where there was no miscalculation in the value of rape, a yield of up to 22-23 quintals per hectare was obtained. The Druzhba Narodov Kolkhoz in Krasnogvardeyskiy Rayon in the Crimean Oblast is obtaining 23-25 quintals of soybeans per hectare.

Unfortunately, throughout the country as a whole, many farms have recently lost interest in growing sunflowers, rape, mustard and other oil-bearing crops. The sowing areas for sunflowers at kolkhozes and sovkhoses in the RSFSR and the Ukraine have been reduced considerably in size. Thus the procurement plan for oil-bearing seed in the Russian Federation was fulfilled by only 77 percent in 1986. As a result, 26 of 43 oil mills were unable to carry out their task for the production of goods. It can be said that the republic's requirements for vegetable oil, using internally produced raw materials, are being satisfied by only 50 percent. Meanwhile, more than 200 farms in the RSFSR have ceased cultivating sunflowers over the past 10 years. Sunflower sowings in Voronezh Oblast have declined by 81,000 hectares. Similar reductions have also taken place in Saratov, Penza and Rostov oblasts.

Let us take still another large region of the country -- Kazakhstan. The conditions found here make it possible to increase sharply the production of oil-bearing crops. However, the production of these crops has for all practical purposes been neglected. It was only recently that there were rather large areas set aside here for mustard and oil-bearing flax and now these sowings have disappeared completely in some areas. Yes and the yields here are mediocre. The republic's two oil-mills are being supplied with only 50 percent of the raw materials needed.

Nor is all going well in connection with the production of seed for oil-bearing crops throughout the country. Highly productive sunflower hybrids are being grown on only one fifth of the sunflower areas. Large quantities of sub-standard seed are being sown. It can be stated directly that the level for the studies being carried out in the areas of plant breeding, seed production and technologies for the cultivation of oil-bearing crops is not in keeping with the modern requirements. Here the scientists are under an obligation to the farmers. This is why a genuine need has developed for increasing the production of seed for oil-bearing crops throughout the country. Specific methods have been outlined for radically improving the work. Economic measures will be employed for the most part.

[Question] Could you not discuss this matter in greater detail?

[Answer] Here the chief lever consists of activating fully the new economic mechanism for management, including in the work all of the material stimuli

for encouraging an increase in the production volumes for the oil-bearing crops and arousing interest among the economic executives in this important work. Commencing this year, the decision has been made to procure oil-bearing raw materials at higher prices than formerly was the case. Whereas earlier a farm received 230 rubles for one ton of sunflowers, it now will cost 350 rubles. The purchasing price for a ton of soybeans is being raised from 400 to 450 rubles, oil-bearing flax — from 245 to 400 rubles, mustard — from 300 to 400 rubles and a ton of delicious lactarius mushroom will sell for 400 rubles. In addition, for surpassing the average annual level for the past five-year plan for delivering oil-bearing seed to the state, while fulfilling the established plan, the farms will be paid a bonus in the amount of 100 percent of the purchase price. If a farm, even though it does not fulfill its plan, achieves an increase in sales compared to the average annual level, it will receive a bonus for each ton sold over and above this level in the amount of 50 percent of the price. Such additional payments will be paid out during the first three years that the kolkhozes and sovkhoses are engaged in cultivating oil-bearing crops.

An increase in the wholesale prices for oil-seed meal and accordingly for mixed feed is considered advisable for the purpose of compensating for the additional state expenditures for procuring the seed of oil-bearing crops. The average price for 1 ton of mixed feed is being raised by roughly 12-13 rubles. This may affect the profitability of animal husbandry operations. However, the expected increase in the production of oil-seed meal will make it possible to balance the feed in terms of protein and result in the final analysis in a savings in concentrated feed.

[Question] Is it true that the farms are awaiting not only additional financial payments but also other stimuli which influence the final product?

[Answer] This was foreseen. For example, there is the counter sale of oilcake and mixed feed. It is being introduced for all oil-bearing crops.

Thus, the return of all oil-seed meal produced is called for in the case of farms engaged in the cultivation of rape. In addition, kolkhozes and sovkhoses which fulfilled their plans for the sale of oil-bearing seed to the state are authorized to procure, over and above the amounts allocated, mineral fertilizer and machines and construction materials which are in high demand.

The plans call for a substantial strengthening of the branch's logistical base and its technical re-equipping, for the production and delivery of the machines and equipment needed for the cultivation of oil-bearing crops using intensive technologies, for modernization of the oil mills and for the creation of scientific-production systems.

The plans also call for the creation of a network of departments for the processing of oil-bearing seed directly at the kolkhozes and sovkhoses and on an inter-farm basis. We are confronted with the task of producing food products for which there is a high demand — sunflower oil, halva and others. The kolkhozes and sovkhoses are authorized to sell vegetable oil to consumer cooperations at agreed upon prices and at markets, following the fulfillment



of their procurement plans. Thus the initiative of the economic leaders will be directed towards satisfying more completely the population's demand for vegetable oil.

Once again, special emphasis should be placed upon the fact that we expect these measures to arouse interest among the kolkhozes and sovkhoses in seriously engaging in the production of oil-bearing seed and especially rape and particularly in the regions of Belorussia, the Baltic, the nonchernozem zone, the RSFSR and also in the Urals, Siberia and northern Kazakhstan. This will be advantageous to farms and the state, since the oil-seed meal will remain fully at the disposal of the kolkhozes and sovkhoses and the country will obtain additional oil. The experience of the Kolkhoz imeni Gastello in Minsk Oblast, where 23 quintals of rape seed are being obtained per hectare, and the Zhelanny Sovkhoz in Omsk Oblast, which obtained 18 quintals of rape seed per hectare from an area of 250 hectares in 1986, confirm this fact quite convincingly.

USSR Gosagroprom [State Agroindustrial Committee] and VASKhNIL [All-Union Academy of Agricultural Sciences imeni V.I. Lenin] are undertaking active measures aimed at substantially improving scientific support for the branch and particularly the effectiveness of plant breeding and accelerating the creation and introduction into production of high yield sunflower hybrids and rape varieties and also highly productive varieties of soybeans and other oil-bearing crops. A great amount of work remains for us to carry out in connection with achieving considerable improvements in seed production for these crops.

At the present time, importance is being attached to including all reserves in operation, expanding the oil-bearing crop fields in those areas where it is possible to do so, mastering the intensive technologies to the maximum possible degree and introducing cost accounting principles and the brigade and family contract methods into operations in all areas.

The sowing of early spring crops is proceeding at a maximum tempo in various regions of the country. Operations are unfolding out on the oil-crop fields. This year they will furnish not less than 7.7 million tons of oil-bearing seed. The farmers must do everything possible to ensure the successful carrying out of the established task.

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CSO: 1824/246



## APK RESTRUCTURING IN ESTONIA EVALUATED

## Background for Shortcomings

Tallinn SOVETSKAYA ESTONIYA in Russian 3 Mar 87 p 3

[Article by L. Kallis, V. Repetskiy and G. Kroon: "The APK [Agro-Industrial Complex]: Restructuring Examined — Prospects and Reality"]

[Text] On 11 January 1983 on the pages of SOVETSKAYA ESTONIYA in an article entitled, "Resource-Sparing Strategy," the former corresponding member and now academician of the Estonian SSR Academy of Sciences, M. L. Bronshteyn, discussed what can and must be expected from improving the management of the agro-industrial complex (APK) and the economic mechanism of its operation. During the 4 years that have passed since then extremely important changes have taken place--a uniform national system of APK management has been created, and a year ago a resolution was passed related to the radical improvement of the economic mechanism of this huge complex.

"Economists have calculated," said M. L. Bronshteyn four years ago, "the great reserve hidden in the restructuring of the economic mechanism. They feel that this measure alone will enable us to increase the effectiveness of investments into agriculture by 30-40 percent. Approximately the same kind of growth in effectiveness will be provided by progressive changes in the structure of the APK and by bringing up lagging links. These reserves must be utilized fully."

Despite the indisputable successes in the development of the republic's agro-industrial complex we cannot yet speak about that significant a break yet. Why not?

We have decided to examine all of the resolutions which were discussed four years ago.

Resolution one: The planning and operation of the agro-industrial complex as a single whole, which will enable us to make the transition to a resource-sparing strategy.

The fact is obvious--in state plans everything that concerns the APK has been put into a special section. And we have noticed a very encouraging tendency of decreased growth in capital investments per 1 percent of growth in gross

agricultural production. It is not difficult to become convinced of this after examining the recently-published reports of the USSR TsSU [Central Statistical Administration] and ESSR TsSU concerning 1986 results. Moreover, for the first time there has been a decrease in capital needed per work unit. But with all of that, the pace of development of this positive phenomenon is still inadequate.

In answering the question about reasons, we must think about whether the APK has become a single complex, especially in our republic.

Let us look at Tartuskiy Rayon, which was at one time one of the best but which recently has chronically been among the lagging rayons. We will also look at Tartuskiy Rayon because often in the weakest link general problems are illustrated more clearly.

Among the reasons given for lags by directors of the Tartuskoye RAPO one of the first that is mentioned is administrative separateness, and not so much of industrial enterprises as of farms.

V. Kherman, Deputy Chairman of the RAPO council, states:

"In 1981 when the RAPO was created only 15 kolkhozes and sovkhoses in the rayon were subordinate to it. Seven farms were subordinate to scientific-research institutes and agricultural academies, including large ones such as Tartu Sovkhoz and Laeva Sovkhoz, and Yulnurme Teaching-Experimental Enterprise. Four sovkhoses including Luunya Sovkhoz remained under the jurisdiction of the former ESSR Ministry of the Fruit and Vegetable Industry. The situation has changed since then, but the problem has not been completely solved. Recently the republic association, Estplodoovoshch [Estonian Fruit and Vegetable Association], transferred Alatskivi Sovkhoz to us but six sovkhoses remain under double subordination."

SOVETSKAYA ESTONIYA had already raised the question of so-called "institute" enterprises several years ago, and using the example of Tartu Sovkhoz it demonstrated the contradictions between the interests of science and mass production. Nevertheless, the then ESSR Agroprom [Agro-industrial association] did not react in any way to the publication. Worse than that, it did not react to the situation either. But as the experience of Tartu has shown, the problem has not disappeared from the agenda.

"The whole point of creating a RAPO was to form a powerful fist from five outstretched fingers," continues V. Kherman. "But this did not occur. Enterprises which we do not manage directly have 38 percent of the land and provided 46 percent of gross production and 54 percent of profits."

At the beginning the RAPO council met almost monthly. Everyone hoped that a general struggle for a common goal would begin. But the unity turned out to be artificial—among RAPO members there was no unity of economic interest.

Everyone wanted to get something from the RAPO but no one was interested in contributing to it.

RAPO funds were allocated not only to enterprises. For example, help was given to interkolkhoz builders and to a canning plant. But in terms of the economic mechanism that same MSO [Interkolkhoz Construction Organization] still bases its work not on the interests of the APK but exclusively on departmental interests. Thus builders have the final choice about what to build and for whom and they are not interested in actively participating in the development of lagging enterprises. Why would a small kolkhoz such as Rakhvaste Syprus Kolkhoz need a large store--cafeteria--consumer service center costing 400,000 rubles? But small-scale building is not advantageous for the MSO. Thus fixed capital continues to grow without a return.

Academician M. L. Bronshteyn told about a recent trip to Hungary, where expensive projects are carried out exclusively by means of bank credit with payments equalling 12 percent annually. But for an inexpensive project which has participated in ministry competition, the cooperative receives subsidies equalling half the estimated cost of the project. Should we then be surprised that in Hungary the cost of a livestock place, for example, has decreased by a factor of 1.5?

Resolution two: All planning must be oriented toward the end result and planning must have precise criteria. Scientists emphasized that planning on the basis of that which has been achieved must be replaced by planning according to resource potential--according to the availability and quality of land, fixed capital and manpower.

The resolution of the CPSU Central Committee and USSR Council of Ministers passed in March 1986 dealing with improving the economic mechanism within the agro-industrial complex foresees the transition to resource-normative planning methods. This method is not new, including for our republic. In the mid-1960's scientific workers Reyn Tiivel and Yan and Yye Praggi assessed the resource potential of the republic's rayons and enterprises and came up with a paradoxical result--reknowned kolkhozes and sovkhoses which have been showered with awards in reality produce much less than their potential allows, whereas more modest neighbors utilize their resources in a truly efficient manner.

We have no intention of justifying subjective errors and mistakes which have been tolerated in the management of the agro-industrial complex of Tartuskiy Rayon. Moreover, we still have to talk about some of these. But is it a demonstration of competence to compare absolute levels of production of, let us say, Kharyuskiy and Tartuskiy rayons?

If we line up all 15 rayons in the republic in order of decreasing resource potential, Kharyuskiy Rayon will be in first place and Tartuskiy Rayon--in 13th.

According to the results of the analysis carried out by the workers of the Estonian NII of Farming and Land Reclamation, the production potential of Kharyuskiy Rayon is greater than that of Tartuskiy Rayon by a factor of 2.5. According to 1985 data, in Kharyuskiy Rayon 5,226 rubles were available per hectare of agricultural lands, and in Tartuskiy Rayon--3,051 rubles, including fixed capital earmarked for agriculture--3,700 and 2,223 rubles respectively. For each 100 hectares of land Kharyuskiy Rayon's farmers had 1.61 standard



tractors as compared to 1.46 standard tractors in Tartuskiy Rayon, energy capacity—724 horsepower in the former rayon and 485 horsepower in the latter, and agricultural workers—12.7 and 8.4 respectively. Kharyuskiy Rayon had the opportunity to utilize 15.6 quintals of feed units per hectare of purchased feed, as compared to only 5 quintals in Tartuskiy Rayon, and mineral fertilizers with active ingredients—272 and 254 kilograms per hectare, and so forth.

So much has been said about the shortcomings in planning according to that which has been achieved, which still continues to exist, that there is no point in delving into this problem. Let us examine just one aspect of this—in the Tartuskoye RAPO workers feel that the 1986 plan for the sale of milk and meat to the government is unrealistic. Maritsa Saarniyt, director of the RAPO planning department, explained that the rayon association tried to realistically divide up this unrealistic plan on the basis of an evaluation of resource potential in enterprises. However, all of our attempts to discover what realistic possibilities the RAPO plan should be based on came to naught. Simply, no one was involved in this work. How can we strive for a goal if we do not know what the goal is? This fact alone speaks of the level of economic thought in the RAPO and in its economic service, and unfortunately not only in the Tartuskoye RAPO.

We were given a demonstration of the methodology developed in USSR Gosagroprom for calculating resources. Actual gross output per hectare of lands was taken as the basis for the evaluation. It is clear even to the non-specialist that in production per hectare a role is played not only by the quality of land but also by supplies of capital, availability and quality of manpower and of no little importance—the level and quality of management, which are subjective factors.

But the most surprising thing was that someone from ESSR Gosagroprom gave his blessing to this methodology, which from the point of view of a scientific foundation would not be able to stand up to criticism.

After this, economic thought on the rayon level can no longer surprise us.

The transition to this type of methodology for calculating resource potential is threatening during the next five-year plan in that the republic's agro-industrial complex will find itself in the position of a heavy truck incapable of moving an excessive load from its place.

#### Decrease of Centralized Paperwork and Funds

Tallinn SOVETSKAYA ESTONIYA in Russian 4 Mar 87 p 3

[Article by L. Kallis, V. Repetskiy, and G. Rozenshteyn: "The APK: Restructuring Examined — Prospects and Reality"]

[Text] Resolution three: It is very important that the fulfillment of plan targets be achieved primarily by means of economic and not administrative factors.



It was this concept that was among the most important during the reorganization of the APK administration. Previous agricultural administrations as well as ministries had been organs of administrative management. For this reason it is not surprising that a torrent of resolutions, orders, instructions, circulars and other bureaucratic creations poured onto the heads of lower parties, including enterprises. But then reorganization occurred. The flow of paper decreased insignificantly.

The deputy director of the Tartu Support-Demonstration Sovkhoz, V. Kraak, told us that during the shock harvest period the RAPO asks for about 60 indexes daily by telephone alone. Why and for what purpose?

The practice of running an organization by means of orders and decrees has been condemned, and even the name--rayon agro-industrial association--emphasizes the economic essence of the new form. But a great deal of time and effort was required in order for the RAPO to receive its first effective economic weapon for its own management--centralized funds. The experience of Pyarnuskiy Rayon has convinced us how effective this weapon is. In Tartuskiy Rayon this capital totalled about 1,600,000 rubles last year. For such a large and as we saw, not terribly strong rayon, this amount is not very significant. The problem is that there are no highly profitable enterprises that are directly subordinate to the RAPO. In Sovkhoz imeni V. I. Lenin and Konguta Sovkhoz alone profitability is over 15 percent, but in the others it does not even reach 10 percent. Can a great deal be taken from such enterprises when, on the contrary, they need to be given resources?

Let's mention here that in a number of enterprises profitability is doubtless affected by purely subjective factors--poor work organization, economic and agrotechnical flaws and a weak zooveterinary service. So there is reason for criticism. But something else is also indisputable--the rayon's enterprises need help in order to reach at least the average republic level in resource potential. Those 1.5 million that are at the disposal of the RAPO are obviously not enough. Here the republic Gosagroprom [State agro-industrial committee] should regulate the situation. But it has at its disposal very poor economic means of management. What remains--to write papers and to break lines of communication. As a result, the senior agronomist of Tartu Sovkhoz, like all the others, spits out into the telephone "average overhead" data which does not mean anything to anyone.

Beginning this year the situation has deteriorated completely since there is no longer a RAPO development fund, and for Tartuskiy Rayon this means both little and a great deal--there this fund comprised three-fourths of all centralized funds.

The newspaper has written on numerous occasions on the subject of the senselessness of various types of reports--these "tables of ranks" of enterprises as regards seasonal work. While chasing after good intermediate results there is often the threat that this will cause serious problems for the end result. How often was Rakvereskiy Rayon chastized for holding back with sowing, or with mowing hay, or with harvesting. But at the end of the year you look and see that the rayon has sufficient reserves of feed, that it has fulfilled all of its obligations to the state and that its milk yield is

one of the highest in the republic. Something similar occurs to one of the best enterprises of Tartuskiy Rayon--Laeva Sovkhoz. But not every director has such strong nerves, not everyone is ready to listen to "abuse" in the name of a distant end result. So fields that are not thoroughly dry are plowed, after-grass is cut before it has grown enough and immature grain is harvested.

Can it really be that the detachments of directors and specialists with a high level of training who are now available to every enterprise are not in a condition to decide for themselves when to sow, when to reap, when to repair equipment and when to harvest? If you trust them with this, half of the RAPO staff will be free--a portion in general and another portion to do its main job--to render assistance to enterprises.

Academician M. Bronshteyn expressed a very interesting idea that the RAPO has been called upon to become a regulating and consultation firm. If the kolkhoz or sovkhoz needed to introduce new technology it would turn to the RAPO. If it needed to analyze why a particular situation is not going well it would turn to the RAPO. The RAPO would provide a draft for the implementation of new technology or for the restructuring of a particular work area. Perhaps this would be done for payment. Perhaps this would be accomplished not through the RAPO's own efforts alone but with the inclusion of scientists and the republic's leading specialists. It would examine whether the enterprise has adequate resources of its own to introduce the plan or whether it will require assistance from RAPO funds.

The functions of the republic's Gosagroprom also require corresponding changes. Then there would be an abrupt change in the amount of paperwork, and assistance offered to rayons would be more effective.

If we can use military terminology for a moment, all tactical questions must be dealt with directly within the enterprise. The RAPO is on the level of operations management, and Gosagroprom--strategic management.

For example, it is on the operations level that we must deal with a problem that is worrying Tartu agro-industrial workers--the size of an enterprise. The Tartu kolkhoz or sovkhoz is one-third larger than the republic average. In its time enlargement was utilized as a means of pulling up lagging enterprises. They were simply attached to stronger enterprises. A sense of moderation was often dismissed. As a result Sovkhoz imeni V. I. Lenin, which was once famous in the republic, never could get back on its feet after the addition of Vyrtseyarve Kolkhoz. From 1976 on production levels have been falling in the combined Kambya Sovkhoz. But less than a year ago Vambola Kolkhoz was separated from it and results began to improve sharply. But what a long procedure this breaking up is, and how much paperwork it involves! And for what purpose?

Economists confirm that our total rights are a constant. It is impossible to increase someone's rights without decreasing someone else's. Right now a great deal is being said about increasing the rights of enterprises and rayon organs, but the higher echelons of power are conceding their rights with great reluctance. Why should they clutch at these rights when they can have something more effective in their hands--economic power?

For example, let us look at mixed feeds from state reserves. Who does not know that it is more convenient and advantageous to use these instead of producing one's own. Everyone tries to "drum up" as much as possible from the state. In that same Tartuskiy Rayon the proportion of purchased feed in the total feed balance is 31 percent, and it has been as much as 37 percent. Moreover, Tartu farmers would gladly have returned to the previous or an even greater figure if only this amount were offered to them. They feel that one of the mistakes they made was that they did not create a large hog factory which operates completely on government feed.

After all, through price policies ESSR Gosagroprom has all the means to influence anyone who likes to chose the easy path. Price supplements could provide capital for the formation of centralized funds, as for example price supplements for mineral fertilizers, which would unavoidably result in improvements in the use of organic fertilizers and would serve the interests of environmental protection. There are just too many "woulds" here. The republic's APK administration still does not know how to use price as an economic factor.

According to the opinion of scientists, the economic management system is founded on subsidies, taxes and prices. No, it is not founded upon them yet.

One of the biggest problems for Tartuskiy Rayon is the cadres problem. In the rayon--the initiator of the movement toward family farms, collective and individual contracts are not gaining the necessary pace of development. Behind all of this once again we find incomplete work in the economic and social spheres which is also the result of economic factors. But this is the subject of a special discussion.

In conclusion we would like to say that state support is not a reward for mismanagement and not a method for nullifying the consequences of one's own poor work. But it is essential as a means of equalizing objective management conditions. This is a strategy. We would very much like to see a system for implementing this strategy developed in the republic's Gosagroprom.

### Educating Locals as Specialists

Tallinn SOVETSKAYA ESTONIYA in Russian 5 Mar 87 p 3

[Article by L. Kallis, V. Repetskiy, and G. Rozenshteyn: "The APK: Restructuring Examined -- Ordering Specialists]

[Text] Discussing the importance of an agricultural education for the specialist is like breaking in when the door is open. We have met graduates of the Estonian Agricultural Academy in the center and on the periphery, in good enterprises and in those we are accustomed to calling economically weak. Before we started our trip we had no doubt that there were no difficulties or problems here, that everything was as clear as daylight. ESKhA [Estonian Agricultural Academy] graduates specialists, sends them to farms and to enterprises of the processing industry and so on and so forth. However, discussions and observations in rayons and an analysis of the phenomena of



village life have brought alarming blots to this seemingly harmonious picture and forced us to make a stop at the agricultural academy.

The director of the educational division, Koydu Veybri, noted that the academy places its greatest emphasis on sovkhos and kolkhos scholarship holders. Fifty-three percent of the people inside the walls of the academy consist of these types of individuals. (For the sake of comparison let us mention that in neighboring Latvia this percentage is 80). This dynamic is confirmed by our observations as well. In Valgaskiy Rayon the dynamics are such: In 1983 6 persons came to ESKhA, all without specialization. In 1984 22 young persons were accepted by ESKhA and of these six were scholarship holders from kolkhozes and sovkhos. In 1985 the figures were 23 (13), and in 1986—49 (41).

Of course this type of rapid growth did not occur at the wave of a magic wand. Behind it we find serious and purposeful efforts by the party raykom, the RAPO and other party organizations. Quite recently ESKhA days were celebrated in Valgaskiy Rayon. Department heads, deans, pro-rectors and rectors met with their prospective students. Soon the same type of event will take place in Khaapsaluskiy Rayon.

It is not accidental that such close attention is being paid to these two rayons. Here there are many concerns on the agenda. We must truthfully admit that people are not breaking down doors to move to Valgaskiy or Khaapsaluskiy rayons. However, we must say that measures that have been taken recently by party and soviet organs and by the RAPO have brought optimism into this difficult process. This can be seen in the dynamics dealing with specialists in Valgaskiy Rayon that we mentioned above.

Now we must mention how the movement back to Valgaskiy Rayon from ESKhA is proceeding. This year more ESKhA graduates (we mean those who graduated in the fall of last year) than ever before have settled in the rayon. In Valga Sovkhos Tynu Toomingas is working as senior engineer, Yuri Pikk and Yak Toym have also begun their lives as specialists as senior electrical engineers in Tagepers and Kaagyarve sovkhos. A graduate of the mechanization department, Vasiliy Buryak, works in the same Kaagyarve as the senior mechanization engineer. Ayvar Moorus, "the sovkhos's own," has become the director of a shop in his native Karula Enterprise. Vadim Frolov was given the same responsibility in Puka Sovkhos.

It would seem that the people of Valgaskiy Rayon would be happy about the changes that are taking place which we will refer to as "ordering specialists." Yet not everything is going smoothly. M. Kolosova, First Secretary of the Valgaskiy party raykom, tells us:

"We understand clearly that the wisest thing to do is to count on the scholarship student, the local person who is tied to our land by his roots. Thanks to this kind of system we will ensure the continuity of peasant dynasties into the current generation. This is why we feel that carrying out professional orientation properly, propogandizing agricultural professions, sending people for training and maintaining not formal bureaucratic but genuine ties with students while they are in training and so on are party



concerns. Nevertheless, in 'ordering specialists' there are many underground reefs which we sometimes cannot avoid."

What does May Elmarovna mean? A strong enterprise has many scholarship students. Weak enterprises have fewer, and not just because of financial considerations. It is simply harder to find them in these kinds of enterprises. We have found that as soon as life improves in a particular sovkhos or kolkhoz young people are more willing to attend agricultural educational institutions. But here we reach another "reef." A strong enterprise that decides to "purchase" an efficient specialist does the following. It pays out the money the enterprise has spent for the specialist's 5 years of training. Frequently no amount of persuasion will stop the "sale-purchase." Often the same thing occurs with assignments within academies, where representatives of the republic's Gosagroprom are present. It is a critical day! All a manager who has left a dependable kolkhoz or sovkhos has to do is come to an agreement with this representative and everything is arranged. Instead of a trip to a weak enterprise the graduate will go to a leading enterprise. An individual can be "abducted" after a year or two of work once his capabilities are known.

"And we cannot turn on the 'red light'," says M. Kolosova. "Strong enterprises always have more real incentives--better wages, a more measured work day, solid social benefits and so forth. They put forth these advantages. I admit that I look with alarm when a 'buyer' appears from a more successful enterprise or rayon."

N. Kozlov, rector of ESKhA, spoke about another problem:

"At the tender young age of 18 a young man or woman must decide where to go to study. If he (she) lives in a poor enterprise and this inadequacy is before his eyes, will he choose to study at ESKhA?"

But let us say that a student completes his studies and is sent to an enterprise where he is very much needed but where objectively-speaking the situation is not improving. He works here for 2-3 years and constantly hears rebukes such as "well, you have destroyed the enterprise," and so forth. Won't this destroy his willingness to live in the village and to work according to his specialty? This is not a purely rhetorical question because there are many such cases.

Here is a reference point. On the eve of the current school year the following picture of admissions to the academy had developed. In the internal division there were 1.3 applicants for each place, and in the correspondence division--1.4. The rector's comment on these figures was, "Since the selection is small it is sometimes necessary to take whoever applies. And in this case it is very difficult to prepare a good specialist."

Sociologists, party workers, soviet workers and managers all agree on one thing--the key to the cadres problem should be sought in solutions to social-economic problems. How should we understand this well-known phrase?

It seems to us that the experience of Karksi Kolkhoz of Vilyandiskiy Rayon can serve as a good example. The enterprise has 570 workers and 67 specialists with a higher education. All of this is related to professional orientation, which is being improved constantly in the kolkhoz. Concern about future cadres begins in kindergarten, the pupils of which visit farms and participate in field work as far as they are able. We agree that "participates" sounds too bold, but after all during children's spring days in Nuyaskiy region a youngster demonstrates his modest experience. Add to that the various clubs that are led by agricultural specialists in schools, meetings between eleventh graders and the region's directors of enterprises, honor days for the best students to which their parents are invited and many other activities. During the last 5 years Karski Kolkhoz has been joined by 13 specialists with a higher education and now another 43 young persons from Karski Kolkhoz are being educated in various educational institutions.

Today not only kolkhozes and sovkhoses, but the RAPO as well has the right to assign scholarship students. Thus perhaps there is reason for the RAPO to send a young graduate of ESKhA to a strong enterprise as an intern-agronomist (zootechnologist, engineer and so forth) for a year? Give him time to become accustomed to his profession, to make a name for himself through creative work and to develop authority. Then he will begin his main work with great confidence. This entire route should be explained to the graduate ahead of time in order to avoid offence or disappointment.

Further, the attempt to "catch" a graduate for a flourishing enterprise almost always ends successfully. All of this will render, no, has already rendered a serious blow to the higher educational institution's distribution mechanism. It is essential to reestablish it--the graduate must work the 3 years in the place where he is sent. A. Vyali, first secretary of the Kaapsaluskiy party raykom, feels that this will firmly guarantee a specialist for an enterprise for 3 years, and then after this, according to data from sociological studies, a certain portion of such specialists will settle down and will continue to work in that enterprise.

Here is another conclusion that can be drawn from numerous conversations. Its essence is this--it is essential to more energetically utilize economic methods in the distribution of specialist cadres. The purpose of this reasoning is the following. It is essential to make efforts to provide approximately equal conditions initially for the graduate who finds himself in a leading enterprise and for his comrade, who begins his life as a specialist in an economically-weak enterprise. We feel that the RAPO should have a fund for this purpose from which it could pay the difference. After all, it is no secret that wages in different enterprises are different. Then why place one graduate into a clearly disadvantageous situation as compared with his friend?

In other words, many problems have arisen in this area. We will not begin to insist that we have found the answers. We simply want the aforementioned opinions to be studied by ESSR Gosagroprom. After all, the harvest depends on a successful solution of these problems.

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CSO: 1824/247

FIELD WORK PROGRESS, WEATHER CONDITIONS IN ALTAY

Retention of Winter Moisture

Moscow SELSKAYA ZHIZN in Russian 6 Jan 87 p 1

[Tass item: "On Large Areas"]

[Text] Barnaul, 5 Jan--Snow, which fell abundantly during the first days of the year, enabled Altay farmers to begin the retention of winter moisture on fields. All the kray's kolkhozes and sovkhoses embarked on it.

Agronomic services of RAPO and farms developed an efficient technique of executing it.

Operation "winter moisture" in Altay will be carried out on 3 million hectares of fields.

Intensive Grain Sowing Campaign

Moscow SELSKAYA ZHIZN in Russian 15 May 87 p 2

[Tass item: "Picking up Speed"]

[Text] Barnaul, 14 May--The sowing campaign in Altay is picking up speed. The kray's kolkhozes and sovkhoses are sowing 100,000 hectares of grain crops every day. Grain growers in piedmont, eastern, and Ob zones have been sowing barley, oats, and wheat from early morning until dusk. In order to establish the basis for a high harvest, machine operators try to place seeds in well-warmed soil clear of weeds. Special attention is paid to intensive fields.

Grain, Industrial Crops

Moscow PRAVDA in Russian 19 May 87 p 1

[Text] Barnaul--Without references to difficulties. Altay farmers are completing sowing on the first 1 million hectares. With due regard for the situation sowing campaign tactics have been developed on the Luch Oktyabrya Sovkhoz in Kosikhinskiy Rayon.

"The weather often toys with us," says S. Gazunin, the farm's chief agronomist. "This year the engineering service has manufactured in advance and provided units with attachments helping to combine several operations. Filling and repair stations have been maximally brought closer to every field."

The grain field of this sovkhos occupies 7,000 hectares. Literally snatching every fine minute from the rainy weather, large mechanized complexes are engaged in sowing.

"Altay's grain sector has fallen behind quite a lot and everything must be done in order to get out of the lag," said the kray agro-industrial committee. "Cadres of managers, specialists, and machine operators have been trained especially for work in the complex situation and according to new technologies. Farms are well equipped with machinery. A sufficient supply of seeds has been stored."

This year will be a turning point for the kray in the cultivation of industrial crops. Large areas of sugar beets and oil crops will also be cultivated according to industrial technology.

#### Insufficient Herbicide Allocation

Moscow SELSKAYA ZHIZN in Russian 10 May 87 p 1

[Article by A. Torichko, SELSKAYA ZHIZN correspondent: "Sowing Has Begun in Altay"]

[Text] More than 40,000 tractors and tens of thousands of harrow bars, cultivators, stubble breakers, subsurface cultivators, sowing units, and special machines and mechanisms for fertilizer application and seed loading--all this well-adjusted machinery stood for a long time, ready to depart for the field. However, there was no warm weather in Altay: Thaws gave way to frosts and snow falls. The first news about the beginning of field work came finally from farms in the eastern zone and in the Rubtsovsk-Aleysk steppe.

"Today the main task is to take measures to accumulate and retain moisture in the soil and to destroy weeds," said A. B. Mishin, deputy chairman of the kray agroprom. "In other words, it is necessary to create the best conditions for obtaining good shoots and developing crops."

The kray's farms planned all work for the shortest time. They proceeded from the availability of BIG-3 harrows, field cultivators, subsurface cultivators, stubble cleaners with flat disks, and other implements. Plans for the utilization of mineral fertilizers were also drawn up. Part of them will be placed in rows simultaneously with seeds. Incidentally, now they are much better than during past years. First-category seeds make up 63 percent. They are sufficient in order to fully sow seeds on areas allocated for crops cultivated according to intensive technology.



The situation with stocks of fodder crops is much worse. For some reason many farms have the opinion that they are used mainly for feeding livestock and it is not mandatory to bring their seeds up to high sowing standards.

It must not be forgotten that the kray's animal husbandry annually experiences an acute shortage of high-protein feed. In this connection the recently adopted decision on increasing purchase prices of oil crop seeds and bartering them for oil cakes and mixed feed has received universal approval by farm managers and specialists. Ways of replacing low-yielding fodder crops with rape, sunflower seeds, and other oil crops, to which little attention has been paid earlier, are being sought everywhere.

Altay's farmers plan to significantly expand crop cultivation according to intensive technology. More than one-half of the sugar beet crops, buckwheat on 50,000 hectares, almost the same amount of millet, and sunflower seeds on 30,000 hectares will now be cultivated according to it for the first time. Unfortunately, these undertakings by Altay farmers encounter difficulties, which sometimes nullify their initiative.

Here is an example. The kray's farms have decided to expand the areas sown with sunflower seeds from 91,000 to 120,000 hectares, but only 32 tons of the highly effective herbicide for weed destruction--treflan--have been allocated to the kray, or one-fourth of last year's amount. Last fall the treatment of crops with this preparation enabled many farms in Slavgorodskiy, Blagoveshchenskiy, and other rayons cultivating this crop to gather 13 to 15 quintals of seeds per hectare, or twice as much as on fields not treated with treflan.

What will managers of farms, RAPO, and the kray agroprom tell families, links, and brigades, which have adopted collective and family contracts for the cultivation of sugar beets and oil and other row crops? How will managers fulfill contractual terms?

#### Grain Procurement Problems

Moscow ZAKUPKI SELSKOKHOZYAYSTVENNYKH PRODUKTOV in Russian No 2, Feb 87 pp 8-11

[Article by A. Verbitskiy, chief of the Altay Administration of Grain Products: "To Consolidate the Success That Has Been Achieved"]

[Excerpts] During the first year of the 12th Five-Year Plan workers at elevators and grain receiving enterprises in Altay Kray honorably fulfilled the task entrusted to them, accepted all the grain entering state bins in a short time, and are engaged in extensive work on ensuring its quantitative and qualitative preservation. The plan for deliveries of strong wheat was overfulfilled more than twice. A total of 3,170,000 tons of grain of the new harvest, including more than 1,600,000 tons of superior-quality wheat, were stored in bins. More high-grade durum was shipped than during all the years of the last five-year plan.

Such success is not accidental. This is the result of well-organized work, introduction of zonal farming systems, an extensive application of intensive technology, and an efficient interaction of all the links of the harvesting conveyer.

For the purpose of clearing warehouse capacities for the acceptance of the new harvest, virtually all grain was transported from remote grain receiving enterprises to line enterprises from November 1985 through June 1986.

A closer interaction between deliverers and grain receiving enterprises, beginning from forward contracts concluded directly on farms with an examination of the real possibility of fulfilling the plan for the sale of grain to the state not only as a whole, but for each crop separately, and ending with a well-coordinated operation of the transport conveyer from the threshing floor to the elevator, was noted during the past year.

The introduction in grain transportation of hourly schedules, which were controlled by rayon transport management centers, contributed to an increase in organization in the operation of grain receiving enterprises. Technological and transport equipment under any weather conditions ensured regular grain acceptance from motor transport.

Usually, harvesting in Altay is accompanied by rains and sometimes even by snow. The year 1986 was not an exception. Virtually all grain was received without a limitation in terms of moisture. As yet there is no other way out, because, in practice, grain deliverers do not have grain drying capacities at their disposal. In order that damp grain does not accumulate at enterprises located in the kray's most humid zone, it was transported by railroad to other elevators for drying. About 100,000 tons of damp grain were transported in such a way and, in all, more than 1.7 million tons of grain were dried at the administration's enterprises.

Taking into consideration that a variety plays a paramount role in the production of high-quality grain, the kray's kolkhozes and sovkhoses ensured the sowing of grain crops at the optimal time on the best predecessors on an area of 4,211,800 hectares, including wheat of strong and durum varieties on 2,800,000 hectares, among them such varieties as Saratovskaya 29, Tselinnaya 60, Novosibirskaya 67, Rossiyanka, Vega, Omskaya 9, Tselinnaya 60, Botanicheskaya 2, Kharkovskaya 46, Altayka, and Almakh. Grain crops were cultivated according to intensive technology on an area of 1.2 million hectares.

A total of 44 out of 59 rayons fulfilled state plans for the sale of grain and 25 out of 41 rayons, of strong wheat. Operational groups worked everywhere. Their task included the detection of strong wheat by means of a preliminary inspection of crops by the method of leaf and tissue diagnosis, a prompt presentation of the necessary documents to grain receiving enterprises, the processing and preliminary evaluation of the quality of grain on threshing floors of kolkhozes and sovkhoses, and the formation of uniform batches for its sale to the state.

Before the beginning of grain procurement, after a careful study of the possibilities of farms in every rayon for the sale of grain to the state, plans for the placement of grain were developed at basic and auxiliary enterprises. The secretary of the kray party committee and chairman of the kray agroprom were acquainted with them.

A successful execution of the procurement of the 1986-harvest showed that workers at the kray's grain receiving enterprises were able to fulfill stepped-up state assignments in an appropriate manner. However, the difficulties existing during past years have also remained until now.

In connection with the fact that grain is delivered to elevators mainly by heavy-freight vehicles and motor trains there is an obvious need for a full replacement of low-power truck tippers with heavy-freight ones. For the time being, however, only 20 percent of the available mechanisms have been replaced. For a successful solution of this problem the RSFSR Ministry of Grain Products must allocate no less than 50 to 60 truck tippers annually to the kray's enterprises, not 20, as was the case last year.

Nor are the kray's enterprises provided with a sufficient amount of fuel for grain dryers.

It is also necessary to envisage the delivery of motor vehicles for field laboratories engaged in a preliminary evaluation of the quality of strong and durum wheat directly on kolkhozes and sovkhozes.

I would also like to mention a no less important problem--making up a complete staff of laboratory workers. In the last few years the kray's laboratories of grain receiving enterprises have felt a shortage of personnel in connection with low wages. It is necessary to examine the problem of increasing the wage rates of laboratory workers.

Assistance to the administration on the part of the RSFSR Ministry of Grain Products in the solution of these problems will undoubtedly contribute to a more successful execution of grain procurement during the second year of the 12th Five-Year Plan.

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CSO: 1824/26

## HOUSING SITUATION IN LENINGRAD EXPLAINED

Leningrad LENINGRADSKAYA PRAVDA in Russian 15 May 87 p 3

[Interview with Yuriy Nikolayevich Lukanin, director of Department for Living Space Accounting and Distribution at the Leningrad gorispolkom by Z. Fedorova: "Waiting List for Apartment"; date and place not specified]

[Text] There is no more acute social problem today than that of housing. Despite the fact that we build in large numbers, a substantial part of Leningrad's residents still live in crowded and sometimes even poor conditions. How is the housing problem being resolved in our city? This question has been raised in many letters to the editors. Readers ask us to "show the cards" on construction and distribution of housing in Leningrad and to tell them about ways of realizing the important task faced by the Party: actually to provide each family with a separate apartment by the year 2000. We have gotten acquainted with Yu.N. Lukanin, director of the Department for Living Space Accounting and Distribution at the Leningrad gorispolkom, and have asked him to answer the readers' questions.

[Lukanin] Such an acute interest in the resolution of the housing problem is also caused by the fact that last year the waiting list for living space was slowed down and moved forward very insignificantly. I will discuss the reasons for that later. The letters with which you had acquainted me contain a large number of calculations and all kinds of estimates. At the same time, each author of a letter does his calculations based on his own information. Therefore, in the beginning of our discussion I will give you several numbers which will define more accurately the actual situation. This year's plan for all departmental construction is to build for the city 1,700,000 square meters of total space. I want to stress that the builders are responsible only for this indicator, namely, total space. Indeed, they build everything: rooms, kitchens, and corridors. As for us, during the distribution of housing, we count only the living space, which represents slightly less than 60 percent of the total space, or 1,000,000 square meters. This is not surprising: living space structure is changing toward apartments with better conveniences: larger kitchens, corridors, and utility rooms. People live not only in rooms; therefore, all conveniences are important to them. However, these two notions, namely, total and living spaces, should not be confused. In my further discussion, I will speak only about living space. Thus, the 1,000,000 square



meters of new housing is the first and main source of space for distribution. If we translate the space into apartments, there will be 28,300 apartments according to our accurate calculations. The second source is the housing coming back into operation after capital repair of buildings. On the average, 38,000 to 40,000 square meters of housing is received for distribution per year (approximately the same amount is returned every year to previous apartment tenants who move back after capital repair; these families, as a rule, are not on the list for new housing).

[Fedorova] Thus, this year the Department will receive for housing purposes 1,040,000 square meters of newly built and repaired living space. Here we approach the main subject of our discussion: how will you distribute it?

[Lukanin] The Leningrad gorispolkom recently approved during its meeting a plan for living space distribution for this year. I will tell you about the main provisions of this plan. Before we proceed with the facts concerning the distribution to people on the waiting list, it is necessary to mention that 25 to 30 percent of the total amount of living space being put into operation is turned over to the Housing Construction Combines (ZhSK). Today they are scheduled to receive 252,000 square meters of living space. Houses already are being built in Shuvalovo-Ozerki, on Grazhdanskiy Prospekt, Lake Dolgoye, and Pushkin. In addition, people are continuously moving out of old buildings that are scheduled for complete capital repair. These buildings are located mainly in the center of the city (60 buildings last year and 70 buildings this year). For this purpose, and for urgent cases in which it is necessary to move out people living in accident-prone and dilapidated buildings scheduled for wreckage, as well as in buildings that are located on the future sites of renovated enterprises and metro stations, 154,000 square meters of space were apportioned. We call these items "distractions" but we cannot do without them: the city is living and growing. A special item is the apportioning of housing to sick people (for example, those with an open form of tuberculosis). They receive apartments from medical commissions organized at rayispolkoms. Each year, these commissions are able to satisfy only the most urgent cases that cannot be postponed.

[Fedorova] And, finally, the people on the waiting list. By the way, Yuriy Nikolayevich, how many Leningrad residents are waiting for their turn to receive an apartment?

[Lukanin] 147,200 families are registered on the waiting list for housing (a single registration procedure has been established in Leningrad). We start the distribution with those categories of people on the waiting list who have the right to benefits, that is, certain advantages when compared with others. These are, first of all, war invalids of the 1st and 2nd categories living in communal apartments and registered before July 1, 1986, and war invalids of the 3rd category registered before January 1, 1986; Heroes of the Soviet Union and Heroes of Socialist Labor; persons awarded the Labor Glory Order of all three categories; women who served at the front as military personnel in active army units for not less than one year who have not established their own families, and those awarded "For Service to the Motherland in the Armed Forces" orders of all three categories; families of servicemen killed defending the USSR; mothers of many children awarded the honor title "Mother-

Hero" or the medal "Motherhood Glory"; and families having 3-4 children of any age. The right to receive living space ahead of terms is also given to Great Patriotic War veterans and persons equal to them, as well as to the families of citizens killed while performing State and social duties, and while protecting Socialist property and law and order. And there is another category of beneficiaries: teachers in general education schools and professional-technical schools (PTU). Understandably, each of the mentioned categories has its own preference on the waiting list.

[Fedorova] Yuriy Nikolayevich, tell me how many people have these benefits, and what is the amount of living space distributed to them?

[Lukanin] The number of beneficiaries is not constant; it varies. It is sufficient to say that with the introduction of an additional benefit for families with many children (before, only those with children under 12 were eligible, while from this year on, children of any age are considered), their number increased several times, and has reached 5,000 families. In total, we assign 31.4 percent of housing to all these categories.

[Fedorova] How far will the waiting list move forward this year?

[Lukanin] This year, the distribution plan intends to improve living conditions for all families who were registered from July 1 to December 31, 1978.

[Fedorova] Incidentally, where will be the house-warming parties this year?

[Lukanin] The main areas of large scale housing construction are: Lake Dolgoye (Zhdanov district), Right Bank of Neva River, areas of Rybatskiy, and Kolpino.

[Fedorova] Yuriy Nikolayevich, many readers, as you understand from their letters, are interested in this: how is the number of families to receive housing this year, for example, determined?

[Lukanin] As it is known, the waiting list records are kept on a monthly and yearly basis. Last year, the scheduled people on the list were those who had registered before July 1, 1978. At the present time, we summed up all others who had registered during the remaining months of 1978, and matched them with the amount of housing designated to satisfy the waiting list. After housing is received from the builders, we will distribute it to the districts in accordance with the number of people on the waiting list living in these districts and their registration period as determined by us. Each district will receive its own amount of housing. There is yet another difficulty. Square meters must be translated into apartments. Until recently, unfortunately architects designed and builders constructed apartment buildings without detailed studies of demography and city needs. Therefore, we are chronically short of one-room apartments. This fact still forces us today to place people for communal occupancy in two- and three-room apartments. The number of such apartments is small (8 percent), but they are still necessary.

[Fedorova] This means that the acute need for the fastest possible solution of the housing problem in our city forces us to change rapidly the housing "assortment."

[Lukanin] Yes. Such a task is facing our builders with all its size. The development of a program to provide all families living in Leningrad with apartments before the year 2000 was just accomplished by specialists with the participation of the Department. This program is a subject for a separate discussion. However, I will mention one figure: we intend to build in Leningrad 660,000 apartments, and more than half of them will be one-room apartments. For us today it is important to receive all that is scheduled, because we base our calculations on builders' schedules that are almost never fulfilled. This was exactly the case in 1985, when the Leningrad Main Construction Authority (Glavleningradstroy) commissioned only 68 percent of the scheduled housing. Such cases had occurred before. This is a cause for the waiting list slowdown about which the residents of Leningrad inquire today. True, there is another objective cause for the slowdown, namely, the increase in living space norms for housing allocation: prior to 1984, the minimum norm was, as it is known, 7 sq. meters, then it was increased to 8 sq. meters, and in January 1987, it became not less than 9 sq. meters per person.

[Fedorova] Yuriy Nikolayevich, we forgot another issue: the distribution of living space which becomes available after people move out, for example, to new apartments.

[Lukanin] The Department takes all this into consideration in a most painstaking way. This year, 215,000 square meters of living space will be freed. Mainly, this consists of rooms in communal apartments. Part of these rooms will be allocated, in accordance with Articles 38 and 46 of the Housing Code, to families who are already living in these apartments, if their living space does not exceed 12 square meters per person (last year, such rooms in addition to already occupied living space received 5,200 families, including those on the waiting list; 78,000 square meters of living space was allocated this way; this year's plan is at the same level). In addition, these rooms are used for widening places of common use, building light-filled kitchens where there are none, and for other purposes: for utility rooms, for placement of young specialists, for families out of boarding houses, etc. Last year, if one includes newly built, capitally repaired, and redistributed living space, living conditions were improved for 43,000 families, of which only 14,200 were on the waiting list. This year, based on the construction program, the result will be approximately the same.

[Fedorova] Based on critical articles in our newspaper published lately, the Department itself has done far too little to accelerate occupancy of new housing.

[Lukanin] First of all, I want to clarify this issue. The functions of the Department end with the issuance of occupancy permits, and actually moving occupants in is a function of the Leningrad Housing Department (Lenzhilupravleniye). So, you should criticize us only for what is our fault. I clarify: today, the number of unissued occupancy permits for apartments in buildings built in 1986 is 230. They are not received by people who have not



decided yet whether to move in or not (sometimes, this is also connected with additional payments for built-in furniture, receiving a reimbursement for a private house, etc.), and whom we have not found the means of influencing; another part of the cases concerning empty apartments is in the courts. A substantially larger number of apartments remains empty for a long time because they cannot be occupied due to builder's fault. I will name the addresses: Vasilyevskiy Ostrov, block 2, building 13b was commissioned in December, 1986, but the tenants started to move in only at the end of March, 1987. The reason: construction deficiencies and lack of public amenities. The second address: Zhdanov district, block 24b, buildings 6 and 6a. The buildings were commissioned in the first quarter of 1987, but almost no new tenants have moved in yet. The reasons are the same. Of a total of 21 buildings built in the first quarter, only 14 are occupied as of today. In other words, the time gap between a report that the construction of buildings is completed and actual occupancy is still large. And in most cases, this is not our fault. We, of course, had to react to the criticism directed against us by the bureau of the Party gorkom. A series of measures taken by the Department have the purpose of providing orderly occupancy of new buildings, and ending the red tape and the sluggishness in drawing up occupancy permits in our Department, at enterprises, and in raykoms. In order to make the requirements more strict, the Department used such an extreme measure as to take back living space, distribution of which had been delayed, from 15 enterprises. During such actions, of course, one should not go to the extreme: a most thorough check of papers supporting the right to obtain housing is necessary during distribution. The main thing during this process is the principle of social justice.

[Fedorova] It is a shame that apartments stay empty, even a few of them, at a time when the demand for housing is growing, and when the waiting period for housing for people without benefits is today 8 to 8.5 years. How is it possible to shorten this period and expedite the waiting list?

[Lukanin] This question is not a simple one, and cannot be resolved in an hour. The mentioned above program specifies an increase in living space commissioning: both new and after capital repair. However, an important addition to this can and must become housing which is built by and with the means of enterprises. The amount of living space that they build today, namely, 67,000 square meters, cannot be taken seriously. While enterprises are demanding from us larger large spaces for expansion of production and "partnership" (to be exact, 222,800 square meters this year), they build practically nothing. Therefore, construction of buildings based on the method of using an organization's own resources must become a law for all managers of enterprises. Leningrad gorispolkom made several decisions in order to help the departments and to stimulate their work in these directions.

[Fedorova] Has a form of construction such as Youth Construction Combines (MZhK) received recognition in our city?

[Lukanin] Such a form of construction is making its first steps. At the present time, young workers are building the first house in the 4th block of the South-West. True, it is being built with the help of the Glavleningradstroy workers. Yet the outlook for MZhK is good. Just recently, a



new combine was organized in our city: MZhKstroy. In addition to new construction, youth complexes will also perform capital repairs. However, here it is important that houses built by them should become an addition to the approved plan and that the youth themselves would actually build them without using construction workers. This is the main purpose of the youth complexes.

[Fedorova] In many letters to the editors, a desire to give more openness to the problems of housing distribution is expressed. They advise the mass media to carry a continuous rubric and regularly publish information about how the housing problem is being resolved in Leningrad. We accept these wishes. But, in addition to this, and this is also important, people demand the maximum openness in rayispolkoms and departments. What can be done here?

[Lukanin] Neither the Department nor the rayispolkoms make a secret of what is being distributed and how. But since the press receives letters with questions witnessing that the authors are poorly informed, we must spread the information and provide it on a regular basis. We must start with the profkoms at enterprises to ensure that during the distribution of housing there, everything would be done openly and publicly. I think that we must also more skillfully inform residents of Leningrad at rayispolkoms. We still have some shortcomings in this matter. People should not have a single unclear question because where there is no clarity, conjectures and rumors are born.

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CSO: 1827/89

## FUTURE IMPROVEMENTS IN DRILLING PERFORMANCE OUTLINED

Moscow GAZOVAYA PROMYSHLENNOST in Russian No 2, 1987 pp 16-19

[Interview with Aleksandr Vasilyevich Mnatsakanov, chief of the Administration of Gas and Gas-Condensate Well Drilling, date and place not given; first nine paragraphs are introduction]

[Text] The All-Union School for Exchanging Leading Experience in Work Organization and the Improvement of Socialist Competition in Drilling took place in Poltava at the facilities of Ukrgazprom VPO [All-Union Production Association]. The school differed from similar schools in that high-level management representatives and drilling foremen participated.

There were no process engineers, economists, time and motion study experts or other representatives of intermediate professions, which form a closely knit management superstructure in the industry. Drillers, who directly carry out the program tasks for rapid and efficient well drilling, were able to share their successes, difficulties, proposals and advice directly with First Deputy Minister V.I. Timonin; A.V. Mnatsakanov, chief of the Administration of Gas and Gas-Condensate Well Drilling; P.V. Basko, deputy chief of URKTiZ [not further identified]; N.V. Diyak, deputy chief of Ukrgazprom, and other administrative and trade-union leaders. If one speaks of a psychological restructuring in the consciousness of drillers, who are striving to show what acceleration can mean for the subsector, then, perhaps, this meeting was a catalyst in the preparation for economic reform.

Poltava was chosen as the meeting site in order to acquaint the school participants with Poltava UBR's [Drilling Administration] experience in organizing labor and competition at drilling sites, which is the best in the sector.

The speeches of meeting hosts N.M. Zayets, chief engineer of the administration, and N.G. Yanko, drilling foreman, as well as a practical seminar conducted by drilling foreman I.I. Osadchuk, furthered this aim.

As many as 30 speeches, reports and notices were given by the participants. I.I. Rybchich, G.T. Partibayev, Ye.Ye. Shklarskiy and A.I. Glinyanov, who are well-known to readers of this magazine, gave speeches at the school. They discussed new labor initiatives, improvement of the management structure, the growth of brigade contract, competition organization and the increase in drillers' skill levels and creativity.

The school was held in the city's hotel complex, which is convenient for work and relaxation. The organizers saw to it that the school was interesting and productive. But, nonetheless, the school could have been more effective if the organizers had given more attention to writing abstracts of the speeches and disseminating them to participants.

Afterwards, the constructive critical proposals and advice of the school participants became the basis for ministry decisions and measures aimed at augmenting the ministry's program for improving labor organization and competition in drilling.

The selection of material published below reflects the individual subjects of the Poltava school, and will acquaint the reader with the participants' opinions.

#### **Urgent Tasks for Subsector Growth**

At one time, the drilling subsector, which had chronic shortages of progressive equipment, lacked regulations for site development and did not give sufficient attention to the social and daily needs of drillers, was not able to solve acceleratedly the tasks of gas-field development. That time is now receding ever further into the past. Aleksandr Vasilyevich Mnatsakanov, chief of the Administration for Gas and Gas-Condensate Well Drilling, speaks about this.

Mnatsakanov: The first test of dynamism in drilling-subsector growth was successfully passed in the 11th Five-Year Plan. This was a period of improvement in technico-economic indicators: the commercial drilling rate for operating wells increased by 18 percent and for exploratory wells by 46.4 percent, the specific time expenditures for 1000 m of drilling were reduced by 30 percent and the total meters drilled per bit increased by 40 percent.

The pace of drilling has not slackened in 1986. The ministry's overall drilling plan was overfulfilled, and all the planned basic technico-economic indicators were achieved. I think that the positive results are primarily based on the realization of the ministry's programs to improve the organization of drilling work, establish an equipment base for enterprises and implement leading technology and efficient equipment for well construction.

In recent years, drilling production associations have been established in Glavtyumengazprom and Orenburggazprom, a drilling trust has been established in Astrakhangazprom and over 20 new drilling enterprises have been organized. This successful development is being aided by an increase in the production volume of drilling equipment, tools and spare parts at the sector's machine-building plants. This volume increased 3-fold, exceeding 26 million R in 1985. In addition, the product list was expanded from 5 to 35 items.

During the last five-year plan, 105 million R of construction and installation work was done at the subsector's production facilities. The

volume of this work in 1985 was 20-fold higher than in 1980. A program for mechanizing bulk-material handling was completed; 13 mechanized systems were put into service, and 5 others are still being installed.

Scientific support for drilling work is again active, and features a thorough creative approach. NPOBT [not further identified], VNIIKrneft [not further identified], MING [not further identified] imeni I.M. Gubkin and institutes of the UkSSR Academy of Sciences have been called upon to solve problems of drilling gas and gas-condensate wells. Scientific-technical sector meetings and conferences of the Scientific-Technical Council of Mingazprom [Ministry of the Gas Industry] helped find solutions to a whole range of well-construction problems in the Urengoy, Yamburg, Astrakhan, Sovetabad and Karachaganakskoye Fields.

New equipment, chemical reagents, drilling-mud reclaiming systems and efficient drilling-fluid systems will be implemented more extensively. Commercial-scale implementation of multiple-well directional drilling has begun at the Yamburg Field.

[Question] Editor: Aleksandr Vasilyevich, an analysis of the activity of drilling enterprises shows that despite a reduction in unproductive time during well drilling, this continues to remain high, as much as 20 percent of the total calendar time. This is especially true for the drilling collectives of Glavtyumengazprom and Astrakhangazprom, which were idle for over 18 and 24 percent, respectively, of the time during 1985. What are the reasons for this?

[Answer] The basic reasons are inefficient organization and poor support for drilling activity. At Yamburg, for example, the bottleneck is the road: the freight artery does not allow the timely supply of materials and equipment. Drilling is not the only thing affected by this problem.

The increase in drilling meterages also is being restrained by outmoded equipment, a high accident rate and substandard work. For example, due to the time spent rectifying substandard work, we lost 325,000 m of drilling during the last five-year plan. We are fulfilling the plan mainly by increasing the number of crews, and not by improving skills. Considering the increase in drilling meterage from 1980 to 1985, only 42 percent of this increase was achieved through improved labor productivity, while the rest was achieved by increasing the number of drilling brigades. Drilling brigades spend much time waiting for drill-rig installation and doing preparatory work.

[Question] You have indicated the direction of organizational efforts for drillers. However, what are the drillers' basic tasks for the present five-year plan?

[Answer] Drilling enterprises face tasks of providing a further increase in drilling meterages, and exceeding by more than 90 percent the meterage achieved in the last five-year plan. The main increase in drilling work is planned for the most promising fields. The increases in drilling meterages by 1990 compared with 1985 will be 1.5-fold at the Urengoy Field, 3.1-fold at the Astrakhan Field and 6.1-fold at the Karachaganakskoye Field. The



drilling meterages at the Yamburg Field will increase; development drilling and commercial exploitation will begin in fields on the Yamal Peninsula.

One of the main reserves for improving production efficiency is to accelerate scientific and engineering progress in drilling. With this goal in mind, the following are planned: 1) to increase the drilling meterage using new, high-efficiency bits, including bits with diamond-carbide inserts, to 4 million m and 2) to complete the development of technological regulations for all stages of well construction in all regions where drilling work is done. During the five-year plan, all drilling enterprises will be fully equipped with SKUB drilling-process monitoring systems and Geotest geological monitoring stations. At the same time that these measures are being accomplished, drilling-enterprise engineering services will be specialized with respect to the main stages of the well construction and startup cycle.

[Question] Aleksandr Vasilyevich, how do you feel about the "beacons," which are assiduously given timely, top-priority support? Does the sector need these favored workers, who are provided with favorable competition conditions?

[Answer] I'm a committed supporter of equal competition conditions. "Beacons" must not be artificially created. But, if a drilling foreman's personal qualities, knowledge and organizational ability result in efficient, economical and high-quality collective work, then this foreman must be supported. This is advantageous for every enterprise and for the sector overall, which is oriented toward reducing the number of brigades by increasing brigade labor productivity. I would like to give the names of several people who are setting excellent examples of high-rate drilling: at Urengoy, the brigades of V.P. Klimash, Ye.Ye. Shklyarkovskiy and A.I. Glinyanov; at Orenburg, V.A. Bondar, M.I. Chelyapin and V.I. Krainov; at the Karachaganakskoye Field, A.P. Ryabov, O.V. Bekasov, and V.Ya. Seredin; in Turkmenistan, A. Magomedov and Kh. Dzhumanazarov, and in Uzbekistan, S. Sarkenov and T. Akhmedov.

The leading experience of these collectives deserves thorough study, not a superficial acquaintance with the essentials of their organizational and technological labor practices. Therefore, the sector's first steps to arrange for base brigades to share experience at their own workplaces for extended periods must be widely propagated in the gas industry.

An important reserve for improving labor productivity in drilling and derrick construction is to implement a new form of cost-accounting: the brigade form of labor organization and incentive. When skillfully used, the brigade contract makes it possible to search for and realize the possibilities for efficiently consuming material and equipment resources, reducing per-meter drilling costs and reducing the time needed for well construction.

In 1985 for the ministry overall, brigade cost accounting covered 76 percent of drilling brigades, which performed over 90 percent of the total drilling meterage, and 75 percent of the derrick-installation brigades, which constructed over 80 percent of drilling sites.

I am convinced that as drilling enterprises convert to the new management form introduced this January, drillers will have markedly greater incentive. The reform will have a basic influence on the mobilization of reserves, the activation of the human factor and the successful fulfillment of the ministry's integrated program to improve drilling efficiency.

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CSO: 1822/145

## DRILLING GAINS AT UKRGAZPROM OUTLINED

Moscow GAZOVAYA PROMYSHLENNOST in Russian No 2, 1987 pp 18-19

[Article by N.V. Diyak, deputy chief of Ukgazprom All-Union Production Association: "Scientific-Technical Progress: The Key to Acceleration"; first paragraph is introduction]

[Text] Our association has to fulfill extremely ambitious tasks during the current five-year plan. The drilling meterage, for example, will increase by more than 2-fold compared with the last five-year plan period, and by 83 percent compared with the actually achieved level.

The average drilling meterage per year will increase from 300,000 to 550,000 m. It must be noted that this is the most drilling work of any enterprise of Mingazprom [Ministry of the Gas Industry]. Our main region of drilling activity remains Western Siberia. The drilling meterage in Urengoy will increase 2.8-fold, accounting for 70 percent of the total meterage of contract drilling in Western Siberia. Not only the amount, but also the difficulty, of drilling work will increase.

This work will be done simultaneously at over 30 widely scattered areas, which are 100 and 300-400 km from service bases. The average well depth will increase by more than 15 percent.

At the Urengoy Field, the main portion of drilling meterage will be concentrated in the northern part of the field, which has more difficult geological conditions.

If labor productivity remained at the present level, this increase in drilling meterage would result in the formation of 35 new drilling brigades with all the support services, which is equivalent to the organization of two new drilling enterprises the size of Poltava Drilling Administration.

We understand that no one will give us this number of new brigades, and that this would not be in the public interest. We are posing the task of increasing the drilling meterage up to 1,250,000 m mainly through a 30-percent increase in labor productivity or, in other words, an increase in the per-worker meterage from 74.5 to 95 m.

For Urengoy, the leading brigades must increase their per-brigade annual meterage to 20,000-22,000 m, and their commercial drilling rate to 2500 m/drilling rig-month.

In order to fulfill this task, we must make a number of further improvements in well-drilling technology. For example, for individual depth intervals in the UKPG-8 region which have low drilling rates, we must: 1) select the proper types of bits; 2) solve problems of reclaiming the drilling mud and 3) select efficient collar arrangements, tool loads, drilling methods and lubricant-additive injection. We must study the experience of the oil industry, which has higher technico-economic indicators.

We need to adapt our work better to winter conditions. Steam heating of the drilling site is inefficient. We need to adopt the Alaskan oil-industry practice of using warm-air heating.

We are dissatisfied with the large "windows" of drilling-brigade idle time. A fundamental change is needed in labor organization: organizing brigades according to tests. We need to follow the experience of the oil industry, which uses 3000-EUK drill rigs to drill well clusters. A further increase in the commercial drilling rate is possible by implementing easy-to-install, low-speed Stratipaks-ATP turbodrills and bits.

Through the use of new types of bits, we must achieve at least a 20-percent increase in the total meters drilled per bit in deep drilling. We are using a series of measures to fulfill these difficult tasks. These measures include: re-equipping drilling enterprises with new high-efficiency equipment and tools, constructing drilling bases and implementing new equipment and leading technology.

Obsolete equipment, including drilling pumps, swivels and rotary tables, will be replaced. Plans are to equip all drilling rigs with efficient mud-reclamation equipment, including VSS-1 vibrating screens, PG-50 sand-removers and IG-50 secondary slime filters.

Derrick-installation brigades will receive 40-ton installation cranes; STGS-60 and -70 hydraulic, high-capacity sledges; BS-ZD drilling structures; BSU-1 universal modular structures and UNBS-1 pump units.

In 1987, construction of pipe bases will be completed in the Krasnograd, Poltava and Stryy UBR's, and the bases in the Shebelinskiy and Krestishchenskiy UBR's will be reconstructed. This will provide improved monitoring of the quality of drill pipe and casing; organization of good-quality repair and, in the final analysis, a reduced accident rate.

Increasing amounts of TBVK and TVPK high-strength drill pipe will be put into service. By 1990, it is planned to convert all drill bits to these types of pipe. In order to improve the wear-resistance of drill bits, we have begun implementing a technology for carbide-surfacing of drill couplings, proposed by the Welding Institute imeni Paton.

Already, 3 of the 5 UBR's have implemented a technology for equipping reinforced drill pipe with ZUK-155 and ZShK-178 couplings. By the end of the five-year plan, we must completely convert to coupling-type reinforced drill pipe, which will provide a several-fold increase in the service life of reinforced drill pipe between repairs, and which will sharply reduce the



danger of drill-pipe sticking. According to the approved program, above-bit shock absorbers will be implemented in much greater numbers. Tests are presently underway to determine which of the various types of shock-absorber designs, developed by the Ivano-Frankovsk Oil and Gas Institute, UkgiproNIIneft [not further identified] and NPOBT, is the most serviceable.

The volumes of drill bits with sealed supports and improved flushing systems will continue to increase.

The volume of drilling using these bits will be double in the present five-year plan compared with the previous five-year plan.

In 1986, the Poltava UBR tested SGVU sealed-support bits for high-speed drilling. The broad implementation of these bits should improve the indicators of turbodrilling by 25-30 percent.

In 1987, series production will begin of 394-mm-dia bits with an ejector flushing system. Tests of trial lots of these bits at the Shebelinskiy UBR showed them to be superior to bits with central flushing systems.

The efficiency of using drill bits, including new progressive-design bits, will largely depend on how well the drilling process parameters are monitored.

For this purpose, we are introducing the SKUB and Krasnograd-1 systems.

Based on the remote-monitoring system now being implemented in the Krestishchenskiy UBR, modernized systems are planned for the Poltava and Shebelinskiy UBR's to centralize drilling-process control at the Yablunovskoye, Berezovskoye and Stepovoye Fields. As a result of the implementation of systems and individual sensors for monitoring and recording drilling process parameters, the total meters drilled per bit is expected to increase by up to 20-25 percent, while the mechanical speed is expected to increase by 10-15 percent.

The draft plan for implementing new equipment and leading technology also provides, in the current five-year plan, for the realization of many other effective measures. A group of these measures, which forms the basis for the acceleration of scientific and engineering progress in the association, will provide a total saving of over 20 million R.

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## CRIMINAL-LAW PROTECTION NEEDED FOR PIPELINES

Moscow GAZOVAYA PROMYSHLENNOST in Russian No 2, 1987 pp 30-31

[Article by I.N. Kremenov, Tashkent Secondary School, USSR Ministry of Internal Affairs: "Public Danger of Intrusions Upon Oil- and Gas-Pipeline Transport"; first paragraph is introduction]

[Text] Special research done by the author in 1982-1985 substantiated the need for special criminal-law protection of existing pipelines.

The pipeline transport system was in its infancy when the existing criminal code was adopted (1958-1960). Because there were only the rare cases of intrusions upon the system by individuals at that time, this area of public activity has not been regulated by criminal law. This is understandable: after all, before these situations could become covered by criminal law, they had to develop and take final shape. Because of the present state of this type of transport, as well as the nature and degree of public danger resulting from intrusions upon it, it can be said that the normal operation of main pipeline transport now must be regulated and protected by criminal law. This conclusion is confirmed by an analysis of publicly dangerous intrusions upon main-pipeline facilities in various parts of the country. The sample of accidents included only those not caused by the natural physico-chemical factors which ordinarily accompany the handling of oil and gas (metal corrosion, pipe aging etc.); i.e., the sample consisted of accidents caused by external mechanical influences upon the main pipelines.

The average number of incidents of accidents and damage for a number of administrations and associations operating oil and gas pipelines has remained more or less stable for a number of years. For the country overall, this indicator is fairly high and, together with other indicators, reflects to a certain degree the nature of the public danger.

The research shows that the nature and degree of public danger of these intrusions depend on a number of circumstances, particularly on the type of transport system. It was established that the destruction or damage of gas pipelines entails greater danger than similar occurrences with oil pipelines. Each instance of destruction or damage of oil pipelines cost the government an average of 7000-24,000 R, while this indicator for gas pipelines is 25,000-34,000 R.

During the course of the investigation, an attempt was made to determine the amount of the material loss which is most characteristic of accidents and damage to oil and gas pipelines. The following criteria were used: small, less than 50 R; significant, from 50 to 2500 R; large, from 2500 to 10,000 R, and very large, over 10,000 R.

The unevenness of the distribution of the loss amounts caused by individual accidents involving oil- and gas-pipeline facilities is obvious in the given case. For example, significant losses in gas-pipeline transport are incurred in only 2 percent of the cases, while this class represents 56.9 percent of the cases for main oil pipelines. The large and very large classes for these types of main pipelines were 98 and 43.1 percent, respectively. For gas-pipeline transport, 62 percent of the accidents resulted in losses of over 10,000 R. The fact that gas-pipeline accidents involving less than 2500 R in damages account for less than 2 percent of all the analyzed intrusions is explained by the particular difficulty of preventing these accidents with this type of transport. This is mainly linked with the rapidity of the onset of destructive consequences.

Besides the considerable material losses caused by accidents and damage to main pipeline facilities, the increased public danger of these events is also a result of the fact that these intrusions result in the main pipelines or their individual sections being taken out of service; material transport is stopped, and the link between producing and refining regions of the country is broken. Because of the greater material losses, the lost production of oil and gas and the pipeline idle time, for which the government must pay penalties, it can be confirmed that the analyzed facts cause the main harm to the country's overall economy. The analysis shows that the damage caused by external, artificial influences on main pipelines represents a very large proportion of the total number of accidents with this type of transport.

The public danger of these activities is also due to the relative unpredictability of the nature of the imminent danger, which makes the destruction of or damage to a main pipeline dangerous not only for normal pipeline operation, but also for other public activities in the vicinity of this transport system. Pipeline intrusions always disrupt the relationships which serve the public safety.

When gas pipelines are broken, the gas surges outward from the damaged section; gas losses are extremely high in a short time. These accidents often have serious consequences. Life and health, as well as socialist and personal property, are threatened, which often justifiably leads to the evacuation of the population and material resources from the accident zone.

Very often, publicly dangerous intrusions significantly harm the interests of nature management: productive lands, pastures and reservoirs are polluted; fires destroy large areas of forest. It is not always possible to calculate these material losses. In those cases where the losses have been established, they are very high. Thus, one break in a main oil pipeline in Tatar ASSR resulted in a large oil spill. This oil contaminated 12 ha of pasture in the Zhdanovskiy Sovkhoz, causing a loss of over 100,000 R. (Footnote 1) (Ryabov, A.A., Okhrana gosudarstvennoy

sobstvennosti na prirodnyye resursy SSSR [Protection of Government Property for USSR Natural Resources], Kazan, Izd-vo Kazanskogo un-ta, 1982.)

Thus, at the present time, intrusions upon the normal activity of main pipelines greatly harm various socialist public relationships within this sphere of production. These relationships, undoubtedly, must be protected by the government from such intrusions; therefore, these relationships require special criminal-law protection. In connection with the accelerated paces of oil- and gas-pipeline development, this problem should be resolved in the shortest possible time.

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## BIOGAS MOTORS DISCUSSED IN POLAND

Moscow GAZOVAYA PROMYSHLENNOST in Russian No 2, 1987 pp 30-31

[Unattributed article under "Information" rubric: "Theme: Gas Motors"]

[Excerpt] The All-Poland Conference "Gas Motors: Design, Research and Operation" was held in September 1986 in Czestochowa, Poland. Over 80 scientists and specialists participated, including a delegation from TsP NTO NGP [Central Administration, Scientific Technical Society of the Oil and Gas Industry] imeni Acad. I.M. Gubkin. The reports, given by representatives of Polish scientific-research organizations, institutions of higher learning and engine-building plants, covered the following directions.

The Use of Biogas as a Motor Fuel. In the reports on this topic, much attention was given to the production of biogas at aeration stations in Czestochowa, as well as to problems of operating motors on biogas. The 100,000-m<sup>3</sup>-per-day aeration station performs mechanical-biological purification of waste waters. In the purification process, three tanks receive up to 6000 m<sup>3</sup> of biogas per day. The optimum gas-production temperature is 33.5° C. The biogas obtained at the station has the following composition: 60-65 percent methane, 30-34 percent carbon dioxide, about 4 percent hydrogen and about 2 percent nitrogen. The low heat value is 21.7 MJ/m<sup>3</sup>.

During the initial period (1977), the aeration stations used a gas-diesel motor for biogas operation, using up to 14 percent priming fuel. However, this motor was inefficient. Later (1978-1984), a spark-ignition motor was used. The 1984-model motor has operated now for over 3000 h, and is presently in service at the aeration station. The gas is supplied through elastic hoses at pressures of 10-100 Pa.

The fuel-air mixture is formed in a mixer, and is supplied to a receiver. The motor features regulation of the fuel-air supply and an automobile-type ignition system with a distributor and one ignition coil. The mixture is ignited by a spark plug mounted in the cylinder head. It should be noted that the motor, which has a fairly high compression ratio (15.6), does not have an engine-knock limit when operating at near-rated loads. Presently, the aeration station has a 12-cylinder, supercharged diesel, with a compression ratio of 12.6 and a rating of 280 kW, which has been converted to biogas operation.

The 1986 motor is much the same as the previous motor, except that it has drives for two distributors, two ignition coils and a gas mixer with a mechanical gate drive.

Methods of Investigating Gas Motors. Methods of testing biogas motors, the results of oscilloscope tracing of gas motors and the influence of errors in determining the top dead center on the tracing results were discussed in detail. Motor parameters are calculated on a Polish-produced minicomputer. The sensors for indicating the combustion process are high-precision, water-cooled piezoquartz sensors. The software, written in Fortran, is used for the following calculations: average gage pressure; change in the temperature during combustion; heat emission during the combustion process; motor efficiency; exhaust losses and losses from incomplete combustion in the cylinder and heat emission to the piston, head and cylinder of the motor.

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## BOOK COVERS CONSTRUCTION OF UNDERGROUND STORAGE AREAS

Moscow GAZOVAYA PROMYSHLENNOST in Russian No 2, 1987 p 37

[Article by A.I. Gritsenko, VNIIGaz [All-Union Scientific-Research Institute of Natural Gases]: "Integrated Approach to the Problem of Underground Construction"]

[Text] Further development of the country's gas-supply system and scientific-technical progress in this area would be unthinkable without the development of underground construction. The monograph "Underground Storage. Construction Conditions, Commissioning and Operational Technology," written by A.Ya. Gayev, V.D. Shchugorev and A.P. Butolin and published by the Leningrad Division of Izdatelstvo "Nedra", illustrates well the leading opinions of the gas industry in this new branch of the construction industry. In contrast with previous works, this monograph treats the problem of underground construction from all points of view, including geological-geophysical, physicochemical, health-hygiene, technological and technico-economic requirements.

The concise structure and good presentation of the information must be noted. The first chapter covers natural and artificial types of storage areas in terrigenous, carbonate and other rocks. Based on technico-economic calculations, the authors show that the construction of underground gas and condensate storage areas made it possible to rectify the disparity between the continuous rate of fuel production and the uneven rate of fuel consumption.

The authors provide an undoubted service in discussing and systematizing the basic requirements and norms for underground storage areas of various types (chapter two). For the first time, this book poses and solves the problem of using underground storage areas not only for storing gas and gas products, but also for on-site gas preparation before transport. The third chapter presents regionalized maps of the USSR based on conditions for underground construction. This chapter also characterizes the main types of reservoir and trap formations, presents new criteria for evaluating geological conditions etc.

The fourth chapter characterizes physicochemical and thermodynamic research on excavated underground space: the temperature conditions of storage areas, and the physico-chemical and thermodynamic mechanisms of the lithosphere in the construction regions, including original experimental

data obtained by the authors on the diffusion solubility of methane in liquids.

Processes of the interaction of production wastes with formation waters and country rock were investigated over wide ranges of physico-chemical parameters.

A significant subject in the book is the technology of operating underground storage areas of various types: for storing gas condensate and production wastes, for on-site preparation of gas and gas condensate etc. (chapter five).

The most valuable part of the chapter is the operating and experimental information, which is of great practical significance for new construction projects.

Chapter six is devoted to the requirements of sanitary environmental monitoring around construction areas. Five basic trends of environmental transformation caused by the technology are described.

Chapter seven describes economic problems and the prospects for underground construction. The system of closed-loop, on-site water removal developed and implemented by the authors is original and simple: the formation waters obtained during gas drying are returned beneath the gas pocket directly from the separator without additional pump equipment.

The technological effect is now obvious, but quantitatively, it requires additional evaluation. The technico-economic data convince us that underground construction is more advantageous than above-ground construction, and that it is not only more profitable, but also sharply reduces the consumption of metals, concrete and electricity, reduces the large amounts of land needed etc.

The book has several shortcomings: for example, there is no systems analysis of the possibilities of multistory use of underground space, nor is there any substantiation of the feasibility of vertically arranging different types of reservoirs.

However, this does not reduce the value of this book, which, due to the integrated approach of the authors to the problem of underground construction, is an exceptionally useful textbook and reference.

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## NEW UNDERWATER PIPE-LAYING TECHNIQUES DEvised

Moscow GAZOVAYA PROMYSHLENNOST in Russian No 2, 1987 pp 56-60

[Article by G.V. Grudnitskiy, candidate of technical sciences, deputy chief of the Glavmorneftegaz Department; O.B. Shadrin, doctor of technical sciences, professor, UNI [Ufa Petroleum Institute], and A.I. Sezin, deputy manager of the Sakhalinmorgazpromstroy Trust, USSR Council of Ministers prize winner, under the "Developing the Continental Shelf" rubric: "Undersea Pipelines: Practice and Problems"]

[Text] In order to develop offshore oil and gas fields, the problem of transporting well products to shore must be solved. Technico-economic analysis showed that undersea pipeline transport is one of the most reliable and economically advantageous methods of transporting liquid and gaseous fuels.

## School of Underwater Crossings

In our country, undersea pipelines have been and are being constructed in the Caspian, Black and other seas; also, much experience of been obtained in building underwater pipelines across rivers and reservoirs. A number of different basic methods can be used for building undersea pipelines, depending on the combination of such factors as the structure and parameters of the future undersea artery; hydrogeological, geographic and climatic conditions and the possibility of using special equipment for installing and laying the pipeline.

The first method is to manufacture and lay the lengths of pipe using pipe-laying barges.

The second method is to float the prepared pipeline by tugboat, and then sink the pipeline at the site.

The third method is to pull long sections of pipeline to the site along the bottom or near the bottom, then use a crane-equipped vessel to lift the ends in order to connect the sections.

The possibility of using each of these methods is limited by a number of factors. For example, the first method is unacceptable in arctic regions or when the sea roughness is greater than 3 points. It is also economically unadvantageous for use in remote waters.

The limitations of the second method are: the depth to which the pipeline can be sunk, due to the permissible bending stresses; transport and laying of the sections when the wave heights are greater than two points and transporting the pipelines over large distances.

The third method must overcome the effects of currents and bends at great sea depths; this can be accomplished only by using large tractive forces.

Also possible are combination methods of laying undersea pipelines, which take into account the advantages of the different methods.

#### At the Limit of Technical Capabilities

During the 11th Five-Year Plan, enterprises of Mingazprom [Ministry of the Gas Industry] operating on the continental shelf achieved certain successes in developing and implementing a number of types of equipment. These enterprises laid the foundation for a production-technical base, which will make it possible to perform most types of work in nonfreezing seas. The free submergence method of undersea pipeline construction has been implemented. Experience has been obtained in laying such pipelines using the pipelaying ship Suleyman Vezirov, which is still the only vessel equipped to prepare, install and lower pipe sections while sailing along a designated route. Moreover, after analyzing the growth rate of development work on the country's continental shelf, it should be noted that one of the reasons for the slow development of undersea oil and gas fields is the weak scientific and design support for underwater pipeline construction. The design solutions and construction technologies for undersea pipelines are episodic in nature and are not integrated.

Arctic and far-eastern regions are characterized by difficult ice conditions, severe climatic conditions and a poorly developed infrastructure. No fundamentally new equipment or technological solutions have been developed, no highly skilled personnel have been prepared and no scientific-production base has been established for laying pipelines in these regions.

While it is time to industrialize the improvement of underwater oil- and gas-pipeline construction technology, the sector is still content with primitive methods of building pipeline crossings.

When the construction of undersea pipelines was still limited to nonfreezing seas, to relatively shallow depths and to pipe diameters of less than 500 mm, the problems of laying underwater pipelines were successfully solved without using special technology. However, greater depths, greater distances from the shore and larger pipe diameters make the new engineering tasks much more complicated, and significantly stiffen the requirements for pipe-laying organization and technology. In this case, as foreign experience has shown, special pipe-laying equipment must be used.

The establishment of offshore wells in freezing seas and seas with intensive ship traffic imposes additional requirements on the design of underwater pipelines, the methods of laying them and the methods of ensuring their reliability.

Take, for example, the practice of embedding the pipe in the seabed, which is a method of guaranteeing operating reliability. Accidents can result from unembedded pipeline. The norms in the USA require that all pipelines in waters less than 200 m deep be embedded. There are similar rules in the North Sea for pipelines less than 500 mm in diameter. We have not yet solved this problem, and there are no normative documents specifying when pipeline embedding is necessary and how deep it should be. Therefore, no research or design work on pipeline-embedding equipment is being performed or planned.

The same can be said about normative documents on the design, construction and operation of undersea pipelines, which explains why these pipelines have extremely low levels of scientific and engineering sophistication.

#### The Program Is Dictated by Time

When evaluating the development of the scientific and construction base for improving underwater-crossing construction, it is impossible not to notice the main thing: that engineering is not advanced enough to meet the time requirements, and is not up to foreign achievements.

Among the basic reasons hindering the establishment of a powerful construction industry for laying undersea oil and gas facilities are the following:

the lack of a unified program of action to establish and service undersea pipelines, and

the lack of a leading and coordinating organization, as well as the lack of a centralized agency in the Mingazprom system which would provide for development of normative and design documentation, construction and operation of undersea pipelines.

Mingazprom, which is performing all the development work on continental shelf fields, including the construction and operation of undersea pipelines, should be interested in the formation of an effective system of managing scientific-technical progress in undersea construction.

The viability and effectiveness of the future system are rooted in the enormous, multiyear experience of developing and implementing original methods of laying underwater pipelines. These methods have been developed with the active participation of specialists from VNIPImorneftegaz [not further identified], scientists from the Ufa Petroleum Institute, personnel from the ministry's underwater-engineering administrations and units and creative collectives from a number of related agencies.

The establishment in the Mingazprom system of an organization to perform scientific research and experimental design work will make it possible in the shortest possible time to: 1) develop jointly with VNIPImorneftegaz a system for embedding and laying pipeline, and equipment for pipeline renewal and repair; 2) develop new technologies and the corresponding equipment for the construction and operation of undersea pipelines on the

northern and far-eastern continental shelves and 3) overcome the particular difficulties in building and operating undersea pipelines in the Caspian Sea, where the extent of deep-water pipelines is expected to increase.

The experience of operating similar pipelines shows that a lack of the proper construction supervision by specialized organizations and a lack of an operating service lead to expensive accidents. Reliable and accident-free operation of undersea pipelines is possible only through periodic inspections and through preventive and planned maintenance.

An organization such as a scientific-production association could successfully solve this task while simultaneously providing for the development of normative documentation and new equipment.

Undoubtedly, the structural transformations justified by the necessity of developing and strengthening such a key activity as underwater construction will be an effective measure in the further provision of reliable transport of oil and gas from offshore fields to land.

#### In the Nevelskogo Strait

The laying of the most difficult first pipeline sections between Sakhalin and the continent confirm the present situation, in which equipment and technologies are developed on-site during the construction process, as a result of a forced, high-pressure creative search for solutions which are both achievable and economically justified.

The construction area of the underwater crossing has difficult natural, climatic and hydrogeological conditions: frequent fogs and cyclones, ice formation in the shallow near-shore sections, lithodynamic activity and frequent storms.

Tidal currents represent a special difficulty for pipeline laying. The maximum flow speeds reach 2 m/s. The underwater pipeline is about 8 km long. Considering the operating and construction conditions, it was decided to embed the pipeline.

The approved project solution to use a pipelaying vessel to lay the underwater pipeline turned out to be unsound, due to the considerable extent of shallow waters (about 5 km) and the difficulty of rearranging anchors along the crossing route.

Selection of a pipelaying method was determined by the harsh hydrometeorological conditions in the crossing route and by equipment availability. The pipeline could not be laid by the free submergence method due to the high current speeds and wave amplitudes. The ice was not stable enough to permit the pipeline to be laid from it. Therefore, it was decided to use the towing method. This technology required the use of platform barges with 15-MN, series-LP pulling winches and anchor devices.

The present authors proposed that the pipeline be towed into place using powerful tugboats from the Sakhalinmorneftegazprom fleet. The main advantage of using tugboats instead of barge-mounted winches to pull the



pipeline is the high towing speed, at which it becomes unnecessary to install high-bearing-capacity stationary anchors.

The construction-installation areas were located on the eastern and western shores of the strait. All types of work were done in these areas: welding the pipe into sections, weld quality control, purging and hydraulic testing, cleaning the inside and outside surfaces, anticorrosion insulation, lining, ballasting the sections with annular cast-iron weights and fitting with pontoons. The prepared sections were placed on a launching track.

The 3.4-km-long deepwater section of the pipeline crossing was laid directly on the sea bottom without embedding.

A pulling cable 63 mm in diameter and 2 km long was pulled along the bottom. This cable length was necessary since the tugboats could not get any closer to the shore because of their deep drafts and the shallowness of the water. One end of the pulling cable was connected with the head of the first pipe section, located on the launching track, while the other end of the cable was connected with the tugboat winch. After the first section was pulled, the second section was laid on the track and connected to the first; after this, the weld quality was checked, the joint insulation and lining were applied and the pulling was resumed. The pulling force reached a maximum of 2.2 MN when the third pipe section was pulled from the track into the water.

The sections in the shallow-water area of the strait, which were 0.54 km long from the western shore and 1.1 km long from the eastern shore, were laid in a similar manner. This work was preceded by the trenching operation; however, due to the conditions, it was inefficient to use a Zeya earth caravan and a ZRS-1 suction-tube dredge.

Considering the hydrometeorological conditions and the short deadlines for completing the crossing construction, it was decided to make the underwater trench using a special plow device designed at the Ufa Petroleum Institute and manufactured on-site. The plow was tested in the near-shore sandy bottom. The test results showed that with a trench depth of 1.8 m and a bottom width of 1 m, the pulling force was 580 kN.

The plow was set on the crossing line and connected with a cable which had been previously laid along the bottom. Using a tugboat, a trench 1.5 km long with a maximum depth of 2.2 m was dug. Inspection by divers showed the trench to be of good quality, and the pipeline was then laid into it, following the plow. The pulling force was provided by two tugboats. The amount of time needed to pull the pipeline was determined mainly by the pauses needed to join the pipe sections.

After the first kilometer of pipeline was pulled, a sudden storm filled the trench containing the pipeline with bottom material. After this, it was impossible to pull the pipe further along the filled-in trench.

After favorable weather returned, pipeline pulling resumed until the sections were long enough to be joined with the ends of the previously laid

deepwater section and the section embedded by the plow device. As a result, two, instead of one, pipeline welds had to be made at sea.

In order to join the ends of the pipe sections together above the water, a special pontoon-scow was built which was 60 m long, 8 m wide and had a carrying capacity of 100 t. The center of the pontoon contained a device to align the pipe ends being joined. The pipe joint ends were raised to the scow by a crane vessel and then set into the joining device. After the heads were removed and the pipes were aligned, welding was performed, along with weld quality control and insulation. Then the pipeline was removed from the scow by the crane vessel and laid on the bottom.

To connect the pipes in the shallow water section of the strait, the joint ends were raised by a pipe-laying device mounted on the scow.

The strong currents, constantly changing in magnitude and direction, produced great resistance to pipeline pulling, which made it difficult to move the tugboats. The long pulling cable made it possible for the tugboats to be off of the specified line, although the pipeline head was moved precisely along it. This was ensured by careful coordination of vessel movements, and by the skill of the tugboat captains, who maintained constant radio communication. As the pipeline was being pulled, its movement was tracked by a theodolite mounted on the shore. When the pipeline head was the slightest bit off of the route centerline, the tugboats would be told to increase or reduce the pulling force, or shift northward or southward by a given distance from the crossing route. Despite the fact that this was the first time that tugboats had performed such a complicated task under conditions such as those in the Nevelskogo Strait, the pipeline was laid very precisely along the route. The deviation in plan view between the ends of the deepwater and the shallow-water sections of the pipeline was less than a meter, which made it easier to join them together.

Thus, despite the difficult conditions in the strait and the absence of special pipe-laying equipment for underwater pipeline construction, the task was successfully solved using a new installation technology: laying the underwater pipelines using tugboats and digging the underwater trench with a plow device. The first line of the underwater crossing across the Nevelskogo Strait was laid in a short time and with a large economic saving.

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CSO: 1822/145

UDC 622.24.085.5:658.5

## WELL EQUIPMENT DEVELOPED FOR DEEPWATER FIELDS

Moscow GAZOVAYA PROMYSHLENNOST in Russian No 2, 1987 pp 60-61

[Article by A.B. Suleymanov, R.A. Safarov, V.S. Krol and L.B. Listengarten, Gipromorneftegaz [not further identified]: "Experience of Operating Wells in Deepwater Fields"; first paragraph is introduction]

[Text] The operating measures used for well clusters on platforms in the 28 April Field ensure continuous operation of natural-flow and gaslift oil wells for a considerable time without the need for maintenance brigades.

The 28 April Field is located within the Apsheron Oil-Gas Rise. The sea depth in this rise is 80-300 m, while the depth of the producing formation [PF] is 3500-4500 m. Wells drilled from the first offshore cluster stationary platforms [OSP] to the 10th horizon of the Balakhan Formation and the discontinuity of the PF produced a commercial oil flow with fairly good natural-flow parameters.

The arrangement of the directional-well cluster on the OSP was as follows: the distance between wellheads for each pair of wells was 2 m, and the distance between pairs (rows) of wells was from 3 to 4 m. A total of 12 to 24 wells are planned to be drilled from the platform. The 28 April Field is presently being drilled with wells using a production string with a diameter of 168 x 139.7 mm.

A two-stage, natural flow-compressor pump of the following design was lowered into the wells on OSP-1: the first stage was 114 x 73 mm tubing string to the upper holes of the filter, and the second stage was 73 mm tubing string to a depth of 1800 m.

In order to provide safe conditions for natural-flow operation of the wells, to ensure the specified output and to provide for the future conversion to gaslift operation without a change in the pump design, OSP-2 uses and will use in newly drilled wells an arrangement which includes the following equipment.

1. Downhole equipment (Fig 1): guide cup 15; landing nipple 14 for downhole instruments; perforated sleeve 13; shear valve 12 for developing pressure in the pipes when the packer is set; landing nipple for mounting the reverse or blind valve 11, which is lowered on a wire; hydraulic (or hydrostatic) packer for sealing the space outside the tube; mechanical

circulation valve 9 for plugging the well; pipe-column disconnecter 8 for disconnecting the pipe column during repair; telescoping connection 7 for temperature compensation; well chambers 6 for holding the blind plugs, inhibitor and startup valves during gaslift operation (three chambers mounted at depths of 1000, 1500 and 1950 m); mechanical circulation valves 5 for well development, mounted at depths of 900 and 2000 m; landing nipple 3 for the removable safety shut-off valve, controlled from the well head; erosion sleeves 2 and 4 above and below each element of the pump arrangement and controlling pipe 1 for supplying pressurized oil from the control panel at the well head to the shutoff valve.

The nipple for the shutoff valve is mounted 50 m below the sea bottom, while the packer is located above the upper holes of the filter at a distance equal to the length of the shank.

The equipment is lowered into the well on a tubing string with a diameter of 73 and 114 mm.



Figure 1. Diagram of the Downhole Equipment.

2. Wellhead Equipment: a) a christmas tree with shutoff gate valves on the strings and on the vertical bore, a pilot valve and a fuse for sending signals to the control station when there are deviations from the specified pressure or when the well-head temperature is too high and b) a control

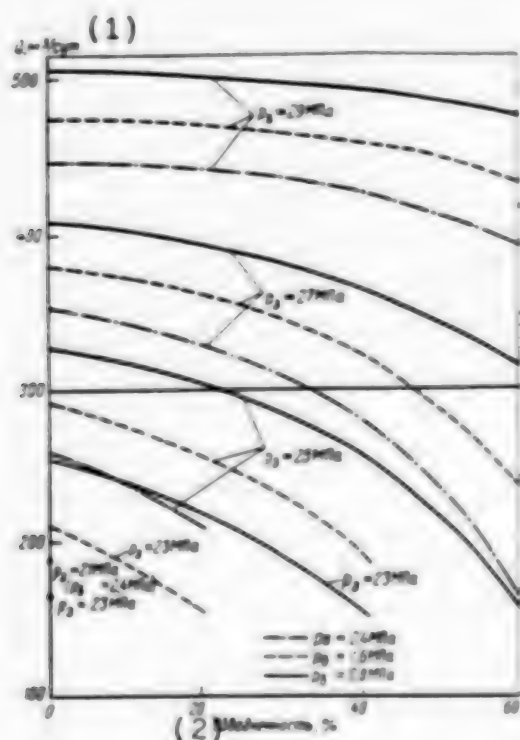


station with a system of control pipes for the well-head system devices and the downhole shutoff valve.

The system of downhole equipment makes it possible to replace the blind plugs in the well chambers with the startup gaslift valves, and to implement gaslift operation without well workover to change the lift design.

Presently, the producing wells produce a free flow of waterless petroleum. An analysis of the mechanical admixtures in the well products revealed the presence of sand. During research work and cable work with downhole equipment, difficulties arose due to the presence of sand in the well product. Also, sand accumulated in the christmas-tree gate valves and a defect formed in oil-collector riser.

These data indicate the necessity of limiting the well flow. The approved technology for developing the field specified a 30-percent reduction in the well flow rates.



$$P_1 = P_{wb}$$

$$P_6 = P_{bu}$$

$$MPa = MPa$$

Figure 2. Curves Characterizing the Performance of the Formation-Lift System.

Key:

1.  $Q$ ,  $m^3/day$

2. Water content, percent

In order to determine the prospects for free-flow conditions in the field, the formation-lift system was calculated. The initial data for the calculation were the following research data obtained during well testing:  $P_{i0} = 34$  MPa;  $P_{pum} = 27$  MPa; gas factor,  $100 m^3/m^3$ ;  $K = 60 m^3/(MPa \cdot day)$ ;

$\rho_n = 0.867 \text{ g/cm}^3$ ;  $\rho_{io} = 0.71 \text{ g/cm}^3$ ;  $T_{wb} = 58^\circ \text{C}$  and  $T_{wh} = 38^\circ \text{C}$ . The total length of the lift was  $L = 3120 \text{ m}$ ; up to  $900 \text{ m}$ , the bore is vertical, while below that, it is inclined at an angle of  $15^\circ$ .

The calculation was performed for buffer pressures of  $0.8$ ,  $1.6$  and  $2.4 \text{ MPa}$ . For gas lift, the maximum working-agent pressure was taken to be  $9.5 \text{ MPa}$ , at water contents of  $0$ ,  $40$  and  $60$  percent and at well-bottom pressures of  $27$ ,  $25$ ,  $23$ ,  $21$ ,  $19$ ,  $17$  and  $15 \text{ MPa}$ . Figure 2 shows curves characterizing the operation of the formation-lift system under these conditions. These curves show that the wells of this field can produce  $300 \text{ t/day}$  by free flow with a reduction in the buffer pressure to  $2.4 \text{ MPa}$ , a reduction in the well-bottom pressure to  $27 \text{ MPa}$  and a reduction in the well-product water content to  $30$  percent.

Gas dynamic calculations of different versions of development and rates of fall of buffer pressure showed that for the conditions of the stationary platform and of the 10th horizon of the producing formation, it is expected that it will be necessary to convert to a mechanized production method to maintain the specified output rates within  $5$  years, given the massive drilling which is planned.

For the specific operating conditions of offshore wells (the great depth of directional wells and their high output rates), the only possible mechanical method of oil production is the gaslift method. Calculations show that a working-agent pressure of  $9.5 \text{ MPa}$  will be required to produce the specified output rates from the wells of the 28 April Field. With an increase in the water content to  $60$  percent and a drop in the well-bottom pressure to  $15 \text{ MPa}$ , the specific consumption of working agent will increase from  $100$  to  $400 \text{ m}^3/\text{m}^3$  at an injection depth of from  $1000$  to  $2300 \text{ m}$ .

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CSO: 1822/145

UDC 622.33.012

## COAL MINING INCREASE AT YAKUTUGOL

Moscow UGOL in Russian No 4, Apr 87 pp 15-18

[Article by V.M. Zhdamirov, general director, Yakutugol Association:  
"Growth of Coal Output in Yakutugol Association"]

[text] Yakutugol has an important role in establishing a regional fuel-energy complex of national significance. The total production capacity of the association's enterprises as of 1 January 1987 was 15.1 million t, including 13.7 million t from surface mines and 1.4 million t from underground mines.

The most important task of all the association's labor collectives during the 11th Five-Year Plan was to improve production efficiency, increase the volumes of coal output and accelerate technical progress. The previous five-year plan was characterized by intensive growth of the association. The volume of coal output increased 3.8-fold from 1980 to the end of the plan, the volume of overburden removal increased 4.1-fold, product sales increased 12.4-fold and labor productivity increased by 166.1 percent. It would have been impossible to achieve these results without using modern mining and transport equipment.

One of the association's main enterprises is the Neryungri Surface Mine, which has a design capacity of 13 million t per year. The 1st phase of the mine, with a capacity of 2.5 million t, was started up in December 1980, while the final, 5th phase, with 2 million t capacity, was started up in 1985. The design capacity of the mine was reached in 1986. Mining and overburden removal are done after drilling and blasting to loosen the rock. Rolling-bit and rotary drilling rigs are used to drill blast holes. SBSH-320 and SBSH-250-55 drilling rigs are widely used for overburden removal. Blast holes are drilled in the coal using SBR-160 rotary drilling rigs. High-capacity quarry shovels are used at the mine. For overburden work, tests are being conducted of domestically made excavators with 20-m<sup>3</sup> buckets; these excavators account for half of the mine's excavators. The overburden is transported by 120- to 180-t dump trucks, while the coal is brought to the receiving hoppers of the cleaning plant by 120-ton bottom-unloading tractor trailers. The mining transport system features trucking of the overburden to outside dumps. Based on the volume of overburden transport (90 million m<sup>3</sup> in 1986), the Neryungri Surface Mine is the largest mining enterprise in the country.

The truck fleet is a unique trucking enterprise with no equal in the sector. The fleet includes 277 high-capacity dump trucks, with a total capacity of over 41,000 t. The high-capacity truck equipment is varied in nature: 120-t BelAZ 7420-9590 coal trucks and 110-t BelAZ-75199 dump trucks. In 1983, BelAZ-75211 and BelAZ-75212 180-t diesel-electric dump trucks began arriving, and there are now 59 of them. In the future, the fleet will be completely based on these high-capacity machines. Presently, the fleet is supported by production areas totaling 69,000 m<sup>2</sup>, and a diagnostic unit with 15 stations has been opened. This unit includes a conveyor with a technical servicing and diagnostic unit, a welding shop, a machining department, a shop for repairing dump-truck assemblies and units, an electrical repair shop, a storage shop for rotating equipment and other auxiliary shops.

During the last five-year plan, work continued at the association to replace equipment and to implement an improved mining technology. In the area of drilling work, as a result of the implementation of new, high-productivity drilling rigs, the average blast-hole diameter increased from 250 to 277 mm. The average annual meterage per listed machine was 48,900 m, while the rock yield per 1 m of blast hole increased 1.6-fold during the five-year plan.

Blasting techniques continued to be improved, and a new technology for hole charging was implemented. As a result, the number of blasting days was reduced to 1/2, and the average volume of rock blasting increased 4-fold, reaching 3 million m<sup>3</sup>. The use of MZ-4 charging machines, MPR-30 loading and weighing machines and MZSh-1 and 2MZSh stemming machines has expanded, which permitted the levels of mechanization for charging and stemming blast holes to be increased to 60 and 83 percent, respectively.

During the 11th Five-Year Plan, the excavator fleet was further modernized and replaced. The average bucket capacity increased by 18.1 percent, and equaled 16.6 m<sup>3</sup>. The fleet structure changed mainly from the introduction of EKG-20 excavators, which now account for 50 percent of the fleet. The increase in bucket capacity and the improvement of production organization made possible a 2-fold increase in productivity of the average listed excavator. The volume of freight transshipments and the freight turnover increased 3.5-fold. The dump-truck-fleet utilization factor increased from 0.45 to 0.53, while the productivity of the average listed truck increased 1.5-fold. The proportion of trucks with capacities of 120 to 180 tons increased from 77 to 84.5 percent. During the 12th Five-Year Plan, the utilization factor of these trucks will increase to 0.56.

The first coal-cleaning plant in Yakut ASSR was the one at the Neryungri Mine, which was put into service in January 1985 and which has a design capacity of 9 million t per year. In the 6 months preceding plant startup, a group of operating personnel was assembled; this group was trained at other cleaning plants in the sector before the new plant started up. This made possible the following achievements: in the second month of operation, the design hourly capacity of the first process line was reached; in July 1985, the millionth ton of clean coal was produced; in September 1985, the daily design capacity of 29,000 t was reached, while on 10 October 1985, 2 million t of clean coal had been produced. At the loading complex of the



cleaning plant and at the temporary loading station of the mine, about 500 rail cars are loaded daily with clean coal, intermediate product and run-of-mine coal.

A new stage in the development of the natural wealth of Yakut ASSR will be the construction of the Amur-Yakut Main Line, which will help solve the problem of integrated regional development, in which priority will be given to the Yakut-Kangalassy Coal Region. The Kangalassy Surface Mine is now operating, with an annual production capacity of 520,000 t of coal, a production cost of 4 R per ton of coal and a labor productivity per worker of 500 t/mo. At the deposit, two sections with large coal reserves have been explored; in the 12th Five-Year Plan, detailed exploration of the reserves in the Eastern section will be completed. The mine uses modern mining equipment: ESh-10/70 draglines with 10-m<sup>3</sup> buckets, for a no-haulage mining system; EKG-5 excavators; 2SBSH-200N drilling rigs; DET-250 and T-130 bulldozers and BelAZ-540 dump trucks.

In order to eliminate the use of wood for fuel (given the great scarcity of wood in the north), and in order to protect the environment on the banks of the Lena River and on the Arctic Ocean coast, a briquetting factory will be built during the 12th Five-Year Plan. Simultaneously, the mine will be reconstructed to increase the production capacity to 1.2 million t.

The association's northern coal-producing enterprises have become an important link in the development of the republic's economy. During the 11th Five-Year Plan, the production volumes at the Zyryanka Surface Mine increased significantly. Mine capacity is now 255,000 t of coal per year. The future plan for development up to 1990 provides for a gradual increase to 600,000-650,000 t per year. In the association, surface-mine production considerably exceeds underground production. This ratio will be maintained in the future.

At the same time, the Dzhebariki-Khaya Underground Mine is one of the most mechanized enterprises in the coal industry. Its production capacity is now 1.17 million t of coal per year. During the 11th Five-Year Plan, the obsolete equipment at the Shtolnevaya Underground Mine was replaced, and the new Dzhebariki-Khaya Mine was started up. The KM-87E mechanized mining systems and the 2K-52 narrow-swath cutter-loaders with individual 2 GSK roof supports previously used at the mine face have been replaced by KM-87UMP and KM-87DN mining systems with 1GSh-68 cutter-loaders, which provide for recessless coal extraction. Until recently, development work was done by drilling and blasting, loading using 1PNB-2 and 2PNB-2B loaders and transport using chain (S-53A, SR-70, SP-63 and SP-202) and belt (1L-80, 1LT-80 and 2LT-80) conveyors in the section workings. In the new mine, the development work is done using GPKSP entry-driving machines. The coal is transported along the main horizontal and inclined passages by 1L-80, 1LU-100 and 1I-100 belt conveyors, while materials and equipment are handled by a 6DMKU monorail conveyor.

When using the new mechanized equipment, difficulties arose in connection with the permafrost. Mine engineers and technicians, together with scientists of the Northern Mining Institute of the Yakutian Branch, USSR

Academy of Sciences, developed a mining system which takes into account the temperature factor, which has a significant effect on all production processes.

The mine collective, after analyzing the basic directions of production development, accepted higher socialist obligations to: 1) increase coal output above the reference figures for the 12th Five-Year Plan by 400,000 t, including by 100,000 t for the years 1986 and 1987, and 2) to reach the one-million mark in coal production 2 years ahead of schedule. The mine collective resolved to achieve a 1.7-fold increase in labor productivity by increasing the mining-face load, mechanizing operations, introducing more productive equipment and improving the organization of socialist competition. The collective also resolved to save 320,000 R by reducing the coal production cost.

The oldest coal-producing enterprise in Yakut ASSR is the Sangar Underground Mine, which has a production capacity of 230,000 t of coal per year. The mining faces are equipped with LGSh-68 cutter-loaders, SP-202 chain conveyors, 2GKS hydraulic supports and a Sputnik roof support. From the working faces, the coal is transported along inclined passages by SP-63M, SR-70, PTY-1, 1L-80, 1LT-80, 1LU-80 and 1L-80U chain and belt conveyors. Mine equipment is to be replaced during the 12th Five-Year Plan. Two MK-75 mechanized mining systems are to be brought in. GPKSP and GPKSV entry-driving machines, K-10 trolley electric locomotives and 6DMKU monorails for mechanized freight handling are to be more widely used. By the end of the current five-year plan, mine capacity will reach 600,000 t per year.

Equipment replacement at surface and underground mines, and efficient mining technology make it possible to ship 37,600 t of coal per day to customers.

Nevertheless, the mining and transport equipment is not being used efficiently enough. Presently, the unique mining and transport equipment is being used at only 45-50 percent of its design capacity; this figure is even lower for individual types of equipment. There are lengthy unplanned shutdowns of excavators, due to the insufficient mechanization of auxiliary work, and to the lag in the development of a repair and material base for mining and transport equipment. Occasionally, miners are subject to technological and production discipline.

One of the most important factors in ensuring the efficient use of mining equipment is the condition of the repair base: the availability of means of mechanization, skilled workers and engineers and machine tools. In recent years, due to the introduction of high-capacity mining and transport equipment at the association's enterprises, the labor intensity of repair and service work has increased more than 3-fold; therefore, along with equipment replacement for the association's repair services, the problem of better organizing the repair service has been solved. For this purpose, the sector's first Razrezremmontazh Administration was established, specializing in the repair of mining equipment. This made it possible to perform medium and capital repairs of excavators and drilling machines, as well as truck bodies. The administration includes three mine-installation sections, six auxiliary production facilities, four specialized brigades and eight various departments and services.

Due to the insufficient development of the repair and material-technical bases, capital repair of machinery and equipment at the Neryungri Surface Mine was only 67 percent fulfilled in 1986. The increasing volumes of repair work required that the repair-base capacity be sharply increased and that repair work be better organized. Therefore, in 1987, the first phase of the Neryungri Mechanical-Repair Plant is to be put into service.

Efficient operation of the association's surface mines depends largely on the reliability of the mining and transport equipment, especially in winter, when it is operated at very low temperatures. EKG-20 excavators, which are being tested and upgraded at the Neryungri Mine, still do not fully conform to the difficult operating conditions at the northern surface mines, and have a number of design deficiencies which prevent them from being used at full capacity (4.2 million m<sup>3</sup>). The performance of truck equipment is still unsatisfactory. During all the years of operation, the technical quality level of trucks was significantly below that stated in the specifications, while the technical availability factor of dump trucks in 1986 was 0.3-0.46.

Scientific-research institutes are contributing significantly to solving these problems. Thirty-two institutes (7 teaching, 2 academic, 20 scientific-research and 3 project-design) are participating in the program of scientific-technical progress. This work produced savings of over 7 million R during the past five-year plan. The institutes of the autonomous republic made important contributions to solving scientific-technical problems.

Nevertheless, the remoteness of the coal complex from the central regions of the country makes quick solution of a number of scientific-technical problems much more difficult. In connection with this, in our opinion, the scientific subdivisions should be combined, and a scientific-technical center on the problems of development of the South-Yakutia complex should be established at the association.

The level of mechanization for blasting and repair work is still comparatively low. A significant proportion of workers is still engaged in manual labor, although this is declining every year. Over the past five-year plan, the proportion of workers engaged in manual labor decreased by 7.3 percent, and 621 jobs were eliminated. Every year, there are inspection-competitions among the collectives of the association's enterprises to reduce manual and difficult physical labor. A target integrated program has been developed for intensifying mining and overburden removal at the association's enterprises. The program gives special attention to the mechanization of manual labor. In accordance with this program, the number of workers involved in mechanized work at the association's surface and underground mines during the 12th Five-Year Plan should increase by 13 percent compared with the 11th Five-Year Plan. An additional 281 jobs will be eliminated. The economic saving from the implementation of these measures will be 2.8 million R.

In the process of attracting wide masses of workers to production management at the enterprises, new forms and methods of labor were introduced, which made it possible to use equipment, material and labor

resources more efficiently. The brigade form of labor organization and incentives will become the main form at the association's enterprises, and it will have an ever greater influence on the solution of economic and social problems. Practice has shown that the most efficient form of labor organization is integrated brigades and sections, using cost accounting and contracts.

The association presently has 15 integrated sections and 158 brigades converted to brigade cost accounting. The working experience of the best sections, those of A.F. Golubev and R.Ya. Yusupov (Neryungri Surface Mine), and the brigades of V.N. Yarets (Dzhebariki-Khaya Mine) and A.A. Borzov (Sangar Mine) showed that these forms of labor organization are fully justified. In 1986, the association established 8 consolidated technological brigade-sections, which were converted to cost accounting; the brigades included all engineers, technicians and repair and service workers. Today, 69.2 percent of all the workers in basic production operations are covered by the brigade form of labor organization. For the basic technological processes (mining, overburden removal, drilling-blasting and dumping), all the workers are organized into brigades. A progressive form of labor compensation using the coefficient of labor participation is being implemented. Presently, wages are distributed according to the coefficient of labor participation in 158 brigades.

In order to further develop and to improve the efficiency of the brigade form of labor organization and incentives, and in order to widely attract workers to production management, brigade and brigade-leader councils have been established at the association's enterprises. These councils are run by the coordinating council of the association's brigade leaders. There are now 140 brigade councils and 19 brigade-leader councils. In the future, collective labor is to be organized in the auxiliary subdivisions and services.

At the association's enterprises, competitions are being conducted for improvement of work efficiency and quality, achievement of the highest record work results, conservation and safety.

The initiative of the mining brigade of V.M. Gvozdev (Raspadskaya Mine, Yuzhkuzbassugol Association) is widely supported in the association's collectives. This initiative was supported by 3500 workers, 100 brigades and 211 truck crews. Twelve of the association's enterprises promised to fulfill the plan for the first 2 years of the five-year plan by the 70th Anniversary of the October Revolution. Among the 12 are the Sangar Mine, the Zyryanka and Kangalassy Surfaces Mines, the Razrezremmontazh Administration and a number of others.

The excavator brigades of V.Ye. Apet, A.I. Dragan, P.I. Luzin, G.V. Belokurov, A. P. Shitikov and V.S. Kozarenko are leaders in socialist competition. The driver-brigade collectives of V.A. Baranov, N.D. Vasyuchkin, A.I. Yemtsov and P.P. Vakhrushev have achieved great labor successes. The following have performed excellent work: N.P. Gorkovenko, N.A. Titov and N.P. Andronov, fitters of the Razrezremmontazh Administration, and G.I. Reznikov and M.P. Karymov, locomotive drivers of the loading-transport administration. Among the participants, first place



in the competition is rightly held by the collective of mining section No 1 of the Neryungri Surface Mine, headed by R.Ya. Yusupov. Sections Nos 4 and 6, headed by S.V. Tishchenko and M.P. Kurochkin, achieved excellent results in overburden removal. The leaders of socialist competition are N.V. Krebs, excavator brigade leader; K.Ye. Nikolayev, excavator operator and laureate of the Order of Labor's Red Banner; S.S. Portnyagin, mining section foreman and an honored miner, and many others.

During the 11th Five-Year Plan, the association received 19 awards in All-Union and republic socialist competition. In 1986, the collective of the Yakutugol Association twice was awarded the Challenge Red Banner of the USSR Ministry of the Coal Industry and of the Coal-Industry Trade Union Central Committee.

Extensive organizing work of enterprise, party, trade-union and komсомol organizations to execute organizational and technical measures helped achieve excellent results. The efficient management of production greatly depends on people's energy, knowledge, abilities and know-how. In the association, a system of measures has been developed which ensures a restructuring of the style and methods of operation of management personnel. This system provides for: 1) regulation of the performance of executives, services, departments and engineers and technicians at all levels of production management; 2) a thorough economic analysis of all activities of the association and 3) planning the work of managers and subdivisions. A major initiative has been made to shift the center of gravity of all the work of the association's executive staff to the worker collectives of the enterprises, brigades, sections and shops.

An effective way to realize reserves is to implement and disseminate leading production experience and progressive labor organization. Schools and seminars, managers' days, directors' councils and schools and brigade leaders' coordination councils have become effective means for disseminating leading experience. In Yakutugol Association, special attention is given to schools of leading experience, which are called upon to provide intensified improvements in labor productivity, and to the utilization of production reserves. Every year, all the association's enterprises develop a plan for organizing these schools; this plan includes proven measures which provide considerable economic savings.

Based on an acceleration of scientific-technical progress, an improvement of labor organization and the growth of socialist competition, the workers, engineers, technicians and office staff of Yakutugol Association promised in 1986 to produce 520,000 t of coal more than planned. In reality, 15,715,200 t of fuel were shipped that year, including 715,200 t above plan. Worker productivity increased by 8.9 percent compared with 1985.

Critical tasks face the association's collective in the 12th Five-Year Plan. There are to be two directions for increasing production volumes and equipment replacement at enterprises: rebuilding the Sangar Underground Mine and the Kangalassy Surface Mine, and constructing new underground mines in South Yakutia: the Denisovskaya Mine, with a capacity of 1.8 million t; the 1.5-million-t Eastern Chulmakanskaya Mine; the 4.5-million-t Western Chulmakanskaya Mine and the 3.6-million-t Kabaktinskaya Mine, all having

high-production equipment. During the 12th Five-Year Plan, the volume of overburden removal at the Neryungri Mine will increase by 21.4 million m<sup>3</sup>, and will total 100 million m<sup>3</sup> in 1990.

Persistent work requires good relaxation also. The following are to be built for workers of the Yakutugol Association: housing with a total living area of 275,600 m<sup>2</sup>, 16 kindergartens, 4 grammar schools for a total of 4512 pupils, 3 houses and palaces of culture, 4 pioneer camps, 48 sports facilities and 3 cafes with seating for 195. The successful resolution of these tasks will be an important contribution of the association's collective to the establishment of a fuel-energy complex of national significance in Yakutia.

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CSO: 1822/146

## CONVENTION ON PHYSICAL SAFE-KEEPING OF NUCLEAR MATERIALS

Moscow VEDOMOSTI VERKHOVNOGO SOVETA SOYUZA SOVETSKIKH SOTSIALISTICHESKIKH RESPUBLIK in Russian No 18, 6 May 87 PP 267-278

[Document published by the Supreme Soviet: "Convention on the Physical Security of Nuclear Materials"]

[Text] Section One

## Convention on the Physical Security of Nuclear Materials

The countries subscribing to the convention,

- recognizing the right of all countries to develop and use atomic energy for peaceful purposes and their legitimate interest in obtaining the greatest benefit from the peaceful use of atomic energy,
- convinced of the need to foster international cooperation in the use of atomic energy for peaceful purposes,
- wishing to avert the potential danger that would result from the theft and use of nuclear materials,
- convinced that violations of the law represent cause for serious concern where nuclear materials are involved, and that there is an acute need to take appropriate and effective measures to prevent and disclose such violations and punish them,
- aware of the need for international cooperation to create effective nuclear materials security programs that will be in accordance with the laws of each country subscribing to the convention, and the convention,
- stressing in addition the importance of the physical security of nuclear materials when used, stored, and transported within a country,
- recognizing the importance of effective physical security for nuclear materials used for military purposes, and understanding that such materials are and will continue to be under strict physical security,

- agree to the following:

#### Article 1

For the purposes of this convention:

a) "Nuclear materials" refers to plutonium, with the exception of plutonium containing more than 80 percent Pu238. It also refers to U233, uranium enriched with the isotopes U235 or U233, uranium containing a mixture of isotopes encountered naturally in a form distinct from ore or ore residue, and any materials containing one or more of the above-mentioned elements;

b) "Uranium enriched with the isotopes U235 or U233" refers to uranium containing the isotopes U235 or U233, or both isotopes in such quantity that the percentage of these isotopes in a quantity of U238 is greater than the percentage of U235 in naturally occurring U238;

c) "International transportation of nuclear materials" refers to shipments of nuclear materials by any means outside the territory of any country where the shipment originates. Transportation originates at the facility of the shipper in this country and terminates at the facility of the receiver in the end recipient country.

#### Article 2

1. This convention applies to nuclear materials used for peaceful purposes and in the process of being shipped internationally.

2. Except for articles 3 and 4 and paragraph 3 of article 5, this convention also applies to nuclear materials used for peaceful purposes when they are being used, stored, and shipped within a country.

3. Except for the obligations specially assumed by the states subscribing to the convention and stated in the articles, covered by paragraph 5, and pertaining to the use, storage, and transport of nuclear material to be used for peaceful purposes, nothing in this convention is to be interpreted as license to infringe the sovereign rights of countries as regards the use, storage, and transport of such nuclear materials within a country.

#### Article 3

In accordance with its own laws and international law, each state subscribing to the convention must take appropriate measures to ensure, to the greatest extent possible, that nuclear materials in the process of international transport and located within the borders of that country, or located on board ships or airplanes operating within the jurisdiction of that country, if such ships or airplanes are transporting nuclear materials to or from that country, be accorded one of the levels of security described in appendix 1.



#### Article 4

1. No country subscribing to the convention shall export or permit the export of nuclear materials if the country subscribing to the convention has not obtained a guarantee that during international transport such material will be accorded one of the levels of security described in appendix 1.

2. No country subscribing to the convention shall import or permit the import of nuclear materials from any country not subscribing to this convention, if the country subscribing to the convention has not obtained a guarantee that such materials will be accorded one of the levels of security described in appendix 1.

3. No country subscribing to the convention shall permit the transit of nuclear materials through its territory on land or internal waterways or through their air- or seaports between countries not subscribing to this convention unless such country has obtained a guarantee that during international transit, to the extent possible, such material will be accorded one of the levels of security described in appendix 1.

4. In accordance with its own laws, every country subscribing to the convention shall employ the levels of physical security described in appendix 1 for nuclear materials being transported from one part of that country to another along international waterways or in the air.

5. In accordance with paragraphs 1-3 above, a country subscribing to the convention and responsible for obtaining the guarantee that nuclear material will be accorded one of the levels of security described in appendix 1 must identify and notify in a timely fashion those countries across whose territory nuclear materials will be shipped by land or internal waterway, or into whose air- or seaports nuclear materials will enter.

6. Responsibility for obtaining the guarantees discussed in paragraph 1 may be transferred by mutual agreement to a country subscribing to the convention and involved in importing a shipment of nuclear material.

7. Nothing in this article is to be construed in any way as license to infringe the territorial sovereignty and jurisdiction of any country, including sovereignty and jurisdiction over its airspace and territorial waters.

#### Article 5

1. The countries subscribing to the convention shall identify the central agency and communications center responsible for physical security of nuclear materials, coordinated recovery measures, and response to illegal movement, use, or conversion of nuclear materials or the threat thereof, and inform each other if necessary either directly or through the International Atomic Energy Agency.

2. In case of loss of nuclear materials through theft, robbery, or other illegal seizure, or the threat thereof, the countries subscribing to the convention will cooperate in accordance with their laws to the maximum extent possible and assist any country that subscribes to the convention and requests assistance with the recovery and security of such nuclear materials. Specifically:

a. As quickly as possible, the country subscribing to the convention will take appropriate steps to inform other countries which, in its opinion, are affected by any loss of nuclear materials through theft, robbery, or other illegal seizure, or of the threat thereof, and, when necessary, notify international organizations;

b. When necessary, interested countries subscribing to the convention will exchange information with each other and international organizations in order to ensure the security of threatened nuclear materials, verify the integrity of shipping containers, and return illegally obtained nuclear materials, and:

- i. coordinate their efforts through diplomatic and other agreed-upon channels;
- ii. assist if requested to do so;
- iii. return nuclear materials stolen or lost as a result of the above.

The form such cooperation will take will be determined by the interested countries subscribing to the convention.

3. The countries subscribing to the convention will cooperate and consult with each other in the appropriate manner, either directly or through the International Atomic Energy Agency, to make recommendations about organizing, employing, and improving systems for physical security of nuclear materials during international transit.

#### Article 6

1. The countries subscribing to the convention will take steps that are consonant with their own laws to protect the secrecy of any information confidentially received from another country subscribing to the convention in response to the provisions of the convention, or obtained in the course of activity involved in implementing the convention. If the countries subscribing to the convention give information in confidence to international organizations, steps will be taken to ensure the secrecy of this information.

2. According to the terms of this convention, the countries subscribing to the convention are not required to give out information which their laws prohibit them from giving out, or which might jeopardize the security of the interested country or the physical security of nuclear materials.

## Article 7

### 1. Any premeditated

a. acts such as obtaining, possessing, using, transferring, converting, destroying, or spraying nuclear materials, performed without the permission of competent authorities and entailing or potentially entailing the death or disabling of any person, or major damage to property;

b. theft or robbery of nuclear materials;

c. deceptive appropriation or acquisition of nuclear materials;

d. demands for nuclear materials based on the threat or actual use of force or other form of intimidation;

e. threats: i. to use nuclear materials to cause the death or disabling of any person, or major damage to property, or; ii. to commit one of the crimes indicated in subparagraph "b" with the intention of forcing a physical or juridical person, international organization, or country to act or refrain from acting in a certain way;

f. attempts to commit any of the crimes indicated in subparagraphs "a," "b," or "c;"

g. acts such as participation in one of the crimes indicated in subparagraphs "a"- "f,"

constitute a crime punishable by all countries subscribing to the convention in accordance with their laws.

2. In light of their seriousness, every country subscribing to the convention will take appropriate steps to punish the crimes listed in this article.

## Article 8

1. Every country subscribing to the convention will take the steps that may be necessary to assert jurisdiction over the crimes indicated in article 7 in the following cases:

a. when the crime is committed in the country itself or on board a ship or airplane registered in that country;

b. when the suspected criminal is a citizen of that country.

2. Every country subscribing to the convention will also take whatever measures may be necessary to extend its jurisdiction to cover these crimes in cases where the suspected criminal is located in the country itself, and the country will not extradite him in accordance with article 11 to any of the countries indicated in paragraph 1.

3. This convention does not limit any criminal jurisdiction that is asserted in accordance with the laws of a given country.

4. In accordance with international law, and except for the countries subscribing to the convention indicated in paragraphs 1 and 2, a country subscribing to the convention may assert jurisdiction over the crimes enumerated in article 7 when such country is exporting or importing the nuclear materials.

#### Article 9

Once it is convinced that it has sufficient grounds for doing so, and in accordance with its own laws, any country subscribing to the convention and in which a suspected criminal is located must take appropriate steps, including keeping the suspect in custody, to ensure the suspect appears in court or is extradited. The countries that will be required to assert jurisdiction in accordance with article 8, and, when necessary, all other interested countries, should be informed without delay of the steps taken in accordance with this article.

#### Article 10

A country subscribing to the convention and in which a suspected criminal is located must, if it is not going to extradite him, convey him without exception and avoiding unnecessary delay to competent authority for criminal prosecution in accordance with the laws of the country.

#### Article 11

1. The crimes enumerated in article 7 are to be treated as crimes for which the offender is subject to extradition in accordance with existing extradition treaties between countries subscribing to the convention. It is mandatory for the countries subscribing to the convention to treat these crimes as extraditable in all future extradition treaties that may be concluded between them.

2. If a country subscribing to the convention and obliged by such a treaty to extradite a criminal is requested by another country subscribing to the convention but without an extradition treaty with the first country requiring it to extradite the criminal, it may if it wishes use the convention as the legal foundation on which to base extradition. Other legal provisions of the country receiving the request take precedence in such extradition cases.

3. Countries subscribing to the convention and not obliged by treaty to extradite a criminal will treat the crimes enumerated here as crimes subject to extradition and covered by the legal principles of the country receiving the request.

4. For the purposes of extradition between countries subscribing to the convention, every crime will be seen as a crime committed not only where it actually took place, but also in the countries subscribing to the convention



and requested to assert jurisdiction in accordance with paragraph 1 of article 8.

#### Article 12

Any person undergoing court examination for any of the crimes noted in article 7 is guaranteed fair treatment throughout the court examination.

#### Article 13

1. The countries subscribing to the convention will cooperate to the greatest extent possible with court examinations of crimes mentioned in article 7. This includes making all evidence at their disposal and necessary for the court examination available. In all cases, the laws of the country receiving the request for assistance are given precedence.

2. The provisions of paragraph 1 of this article do not affect obligations under any other bilateral or multilateral treaty which partially or completely governs or will govern mutual assistance in criminal cases.

#### Article 14

1. Every country subscribing to the convention will inform the depositories about those of its laws and decrees that affect implementation of this convention. The depository will periodically send this information to the countries subscribing to the convention.

2. The country subscribing to the convention and in which criminal charges against a suspected criminal have originated will inform interested countries of the final result of the court examination directly and in the shortest period of time possible. The country subscribing to the convention will also inform the depository of its final decision; the depository will inform the other countries subscribing to the convention.

3. If a crime concerns nuclear material used for peaceful purposes during its use, storage, or transport within a given country, and the suspected criminal and nuclear material remain inside the country subscribing to the convention and where the crime took place, nothing in this convention shall be construed as a requirement that a country subscribing to the convention provide information about the court examination of the crime.

#### Article 15

The appendixes are an essential part of this convention.

#### Article 16

1. Five years after the date this convention becomes effective, the depositories will convene a conference of the countries subscribing to the convention to review the extent to which the convention has been implemented and the degree to which its preamble, body, and appendixes are appropriate for the situation at that time.

2. Subsequently, a majority of the countries subscribing to the convention may call no more than one conference every five years for this purpose by appealing therefor to the depository.

#### Article 17

1. In the event of a disagreement between two or more of the countries subscribing to the convention about how to interpret or apply this convention, the countries subscribing to the convention will consult jointly to settle the dispute through negotiation or any other peaceful way of settling disputes that is acceptable to all parties to the dispute.

2. Any such dispute that cannot be settled using the techniques in paragraph 1 will, upon request of any party to the dispute, be dealt with by arbitration or the International Court of Justice. If arbitration is agreed upon as the technique for resolving the dispute and no decision can be made about the organization of the arbitration examination for six months from the date of the original request for arbitration, one of the parties may ask the president of the International Court of Justice or the secretary general of the United Nations to appoint one or more arbitrators. If the parties to the dispute have conflicting requests, the appeal to the UN secretary general has priority.

3. During the process of signing, ratifying, adopting or approving this convention or agreeing to observe it, any country subscribing to the convention may announce that it does not regard itself bound by the dispute settlement procedures prescribed in paragraph 2. Other countries subscribing to the convention are not bound by any dispute settlement procedure prescribed in paragraph 2 in areas where another country subscribing to the convention has put conditions on some aspect of the procedure.

4. Any country subscribing to the convention and putting conditions on the dispute settlement procedure in accordance with paragraph 3 may cancel the condition by informing the depository.

#### Article 18

1. Before becoming effective, this convention will be made available for signing by all countries at the central facilities of the International Atomic Energy Agency in Vienna and the central facilities of the United Nations in New York starting 3 Mar 1980.

2. This convention will have to be ratified, adopted, or approved by the countries that sign it.

3. After becoming effective, this convention will have open status to permit other countries to subscribe to it.

4. a. This convention may be signed by international organizations and integrated or other regional organizations, or such organizations may agree to observe it, as long as any such organization consists of sovereign states and

has the competence to conduct negotiations and conclude international agreements on issues dealt with in this convention.

b. When issues fall within their competence, these organizations will enforce the law and carry out the obligations assumed by the countries subscribing to the convention on their own behalf.

c. Once it subscribes to this convention, such an organization must send the depositary a statement indicating what countries are members of the organization and which articles of this convention do not apply to them.

d. Such an organization does not possess a vote beyond the individual votes of its members.

5. Documents pertaining to ratification, adoption, approval, or agreement to observe the convention are to be given to the depositary for safe-keeping.

#### Article 19

1. This convention becomes effective on the thirtieth day after the date the twenty-first ratification, adoption, or approval is submitted to the depositary.

2. For every country that ratifies, adopts, approves, or agrees to observe this convention after the date the twenty-first ratification, adoption, or approval is submitted to the depositary for safe-keeping, this convention becomes effective on the thirtieth day after said country turns in its ratification, adoption, approval, or agreement to observe the convention.

#### Article 20

1. Without prejudice to article 16, a country subscribing to the convention may propose amendments to this convention. Such amendments are submitted to the depositary, which immediately distributes them to all countries subscribing to the convention. If a majority of the countries subscribing to the convention request a conference to review the proposed amendments, the depositary will invite all the countries subscribing to the convention to the conference, which will start no sooner than thirty days after the invitation is sent. Any amendment adopted at the conference by a majority of two thirds of the countries subscribing to the convention will immediately be distributed by the depositary to all the countries subscribing to the convention.

2. For every country subscribing to the convention, an amendment becomes effective on the thirtieth day after two thirds of the countries that will be submitting a ratification, adoption, or approval of the amendment actually submit their documents to the depositary. Thereafter, the amendment becomes effective for every other country subscribing to the convention when such country turns in its ratification, adoption, or approval of the amendment.

## Article 21

1. Every country subscribing to this convention may denounce the convention by notifying the depositary in writing.

2. Denunciation of the convention becomes effective one hundred and eighty days after the date the depositary receives the notification thereof.

## Article 22

The depositary will immediately notify all countries:

- a. each time this convention is signed;
- b. each time a ratification, adoption, approval, or agreement to observe the convention is received;
- c. each time a condition is put on or removed from the convention in accordance with article 17;
- d. of any statement sent by any organization in accordance with paragraph 4 "c" of article 18;
- e. when this convention becomes effective;
- f. when any amendment to this convention becomes effective;
- g. whenever this convention is denounced in accordance with article 21

## Article 23

The original of this convention, whose versions in the English, Arabic, Spanish, Chinese, Russian, and French languages are all equally authentic, will be given for safe-keeping to the general director of the International Atomic Energy Agency, who will send notarized copies to all the countries.

In witness whereof, the appropriately empowered signatories affix their signatures to this convention made available for signature in Vienna and New York on 3 March 1980.

## Appendix 1

### THE LEVELS OF PHYSICAL SECURITY USED FOR INTERNATIONAL SHIPMENTS OF NUCLEAR MATERIALS CLASSIFIED IN APPENDIX 2

1. The levels of physical security for nuclear materials being stored prior to, during, or after international shipment include:

- a. storage of category 3 materials in controlled access areas;
- b. storage of category 2 materials in guarded or electronically monitored zones enclosed by a barrier with a limited number of entry checkpoints, or in any other zone with an equivalent level of physical security;
- c. storage of category 1 materials in protected zones, as defined above for category 2 materials, to which access is granted only to persons of proven reliability, and which is under the permanent guard of a unit maintaining close contact with a response team. The purpose of any action that may be



taken is to discover and prevent any attack, unauthorized entry, or unauthorized removal of materials.

2. The levels of physical security for nuclear materials during international shipment include:

a. materials in categories 2 and 3 must be shipped in accordance with special precautionary measures, including prior contract between sender, shipper, and receiver, and prior agreement between the physical and juridical persons guided by the laws and under the jurisdiction of the importing and exporting countries. This agreement sets the time, place, and procedure for effecting the transfer of responsibility during shipment;

b. materials in category 1 must be shipped in accordance with the special precautionary measures outlined above for category 2 and 3 materials, and, additionally, must be kept under guard, with the guards maintaining close contact with response teams;

c. for shipments of more than 500 kilograms of natural uranium in a form distinct from ore or ore residue, security during shipment includes prior notification that the shipment will be taking place, with mode of transportation, expected time of arrival, and confirmation of receipt of shipment all indicated.

## Appendix 2

TABLE: CLASSIFICATION OF NUCLEAR MATERIALS

Material	Form	Categories		
		1	2	3c
Plutonium (a)	Non-radioactive (b)	2 kg or more	less than 2 kg, but more than 500 g	500 g or less, but more than 15 g
Uranium235	Non-radioactive(b) -uranium enriched with 20 % or more U235	5 kg or more	less than 5 kg, but more than 1 kg	1 kg or less, but more than 15 g
	-uranium enriched with 10 to 20 % U235			less than 10 kg, but more than 1 kg
	-uranium more enriched than in natural state, but with less than 10 % U235			10 kg or more

Uranium233	Non-radioactive(b)	2 kg or more	less than 2 kg, but more than 500 g	500 g or less, but more than 15 g
Radioactive fuel			combined or natural uranium, thorium, or slightly enriched fuel (with less than 10 % fissionable isotopes)(d,e)	

a. All plutonium, with the exception of plutonium containing more than 80 percent P238.

b. Material not irradiated in reactors, or material irradiated in reactors but at less than 100 rad/h at a distance of one meter unshielded.

c. Quantities not falling within category 3 and natural uranium should be safe-guarded as carefully as feasible.

d. Although this level of security is recommended, countries may specify a different level of security depending on the actual situation.

e. Other fuel which, depending on its original fissile material composition, was in categories 1 or 2 before it was irradiated, can be dropped no more than one category if the level of irradiation of the fuel was greater than 100 rad/h at a distance of one meter unshielded.

On behalf of the USSR, the USSR Presidium of the Supreme Soviet signed the convention on 22 May 1980 and ratified it on 4 May 1983, with the following condition accompanying the signature:

"The Union of Soviet Socialist Republics does not regard itself bound by the provisions of paragraph 2 of article 17 of the convention pertaining to the preferring of disputes to arbitration or the consideration of the International Court of Justice at the request of any of the parties to the dispute."

The USSR ratification was submitted to the general director of the International Atomic Energy Agency on 25 May 1983.

In accordance with article 19 of the convention, the convention became effective for the USSR on 8 February 1987.

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August 18, 1987

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